



INSIDE



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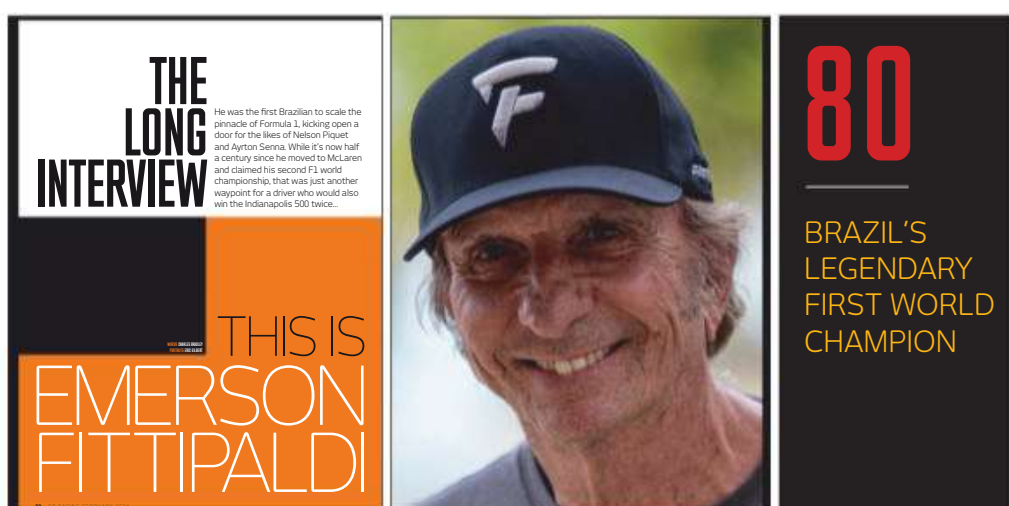
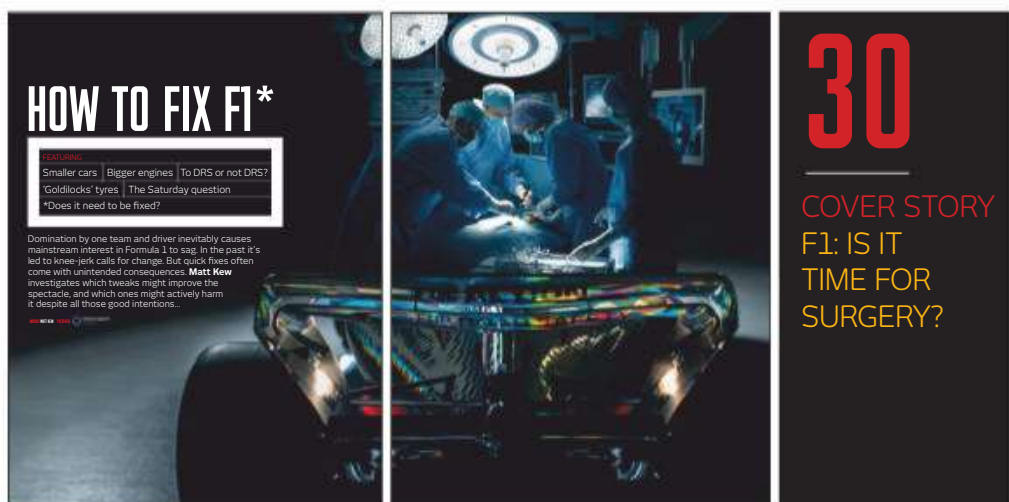
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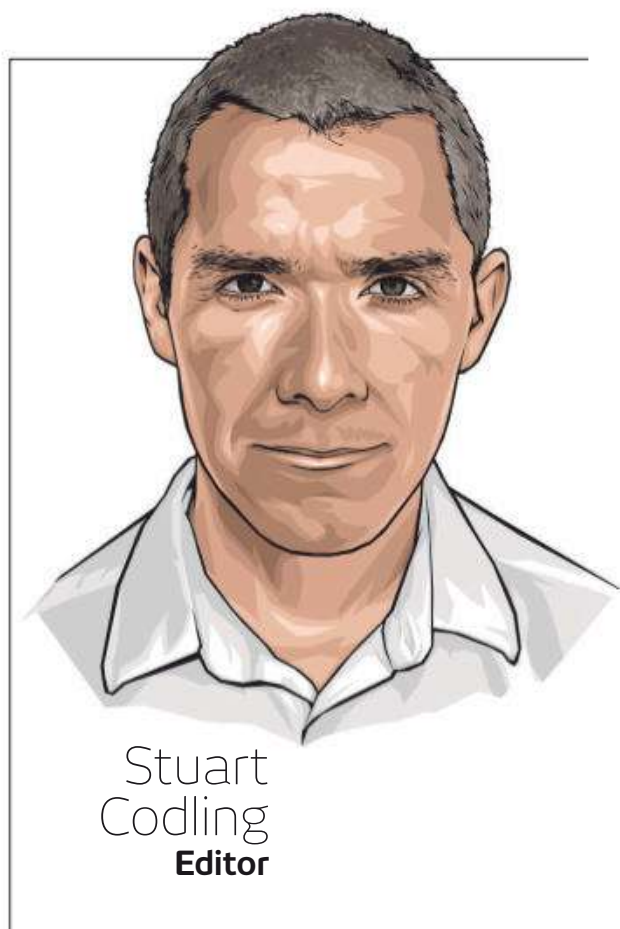
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Be wary of temporary fixes...

There's a certain well-worn maxim that "if it ain't broke, don't fix it". While serviceable enough in most contexts, it sits uneasily upon the shoulders of Formula 1 as we contemplate a 2024 season of almost no change – and a To-Be-Confirmed future ruleset arriving in 2026 under which not a lot will change. Late capitalism dictates a trajectory of eternal growth and it appears F1's stakeholders have bought unquestioningly into an immediate and distant future in which the rapid growth curve (in both audience reach and commercial revenues) seen in recent years is extrapolated onwards to the stratosphere. Strap yourselves in – billion-dollar franchise values here we come!

And yet there is evidence to suggest the froth is blowing off. We'll skirt past last year's survey which majored on F1 social media interactions being in sharp decline; the commercial rights holder disputes the numbers and, indeed, the source was one of those PR-guff-dressed-up-as-news emails that sensible folk delete straight away (unless it's a slow news day). Let's consider, instead, the hard facts of audience fatigue: flattening TV ratings, plus indifferent ticket sales at many venues.

That's why we've taken the opportunity this month to muse over whether doing nothing is the right course of action. While F1 may not be in need of an intervention so substantial as to merit the term 'fix', there are tweaks and corrections which would improve the spectacle. Our main aim in composing this shopping list was to avoid

ill-considered sticking-plaster solutions which have arrived freighted with unforeseen consequences over the past few years. We are, after all, still living through an era where tyre performance is essentially defined by Bernie Ecclestone's 'lightbulb moment' during the 2010 Canadian GP.

Sadly, it looks as though more rather than fewer of these "patches" – not my word but one chosen by Red Bull technical director Pierre Wache – are in prospect. Come 2026 the MGU-H, that most difficult element of the hybrid powertrain to get right, is to be deleted in the name of 'simplicity' (ie forming less of a barrier to entry for new power unit suppliers). In tandem with this, the contribution of the electrified part of the powertrain will rise to 50% of total power output. Simulations are suggesting cars may run out of battery power on some tracks. Active aerodynamics have been proposed as a cure for this, at a cost of making the target car-weight cut of 50kg more difficult to achieve.

Active aero may be an increasingly frequent feature on high-performance road cars but in Formula 1 it appears to be the epitome of a sticking-plaster fix to a self-created problem. Feel free to disagree – we might even help F1 move that poor benighted social-media-interactions needle...

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Contributors



MATT KEW

Matt analyses what F1 can do to rekindle interest after a year of Red Bull domination, while avoiding making matters worse (p30)



RONALD VORDING

Ronald appears in GP Racing for the first time after he chatted with McLaren tester and IndyCar star Pato o'Ward (p56)



CHARLES BRADLEY

Motorsport.com editor-in-chief and a former Autosport ed, 'Jarv' sat down with F1 legend Emerson Fittipaldi for a long interview (p80)



ERIC GILBERT

Motorsport tv CEO Eric also turns his hand to photography and captured a relaxed Emerson Fittipaldi for us in Miami (p80)

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THE SHOW MUST GO ON (A DIET)

01 **Shorter, narrower, considerably** lighter – and perhaps a touch slower. The FIA is putting the finishing touches to the technical regulations for the new era of Formula 1 that will begin in 2026. In terms of the contents of the engine bay it will involve the most extensive changes since 2014, when hybrid powertrains were introduced.

As well as new specifications for the power units (involving the adoption of synthetic fuels and the removal of the MGU-H), the rules will alter the make-up of the cars themselves. Among the biggest changes will be a significant weight reduction. As detailed in our cover feature this month (see p30), car weight has far-reaching effects on performance and ‘raceability’.

From around 640kg in the V8 era, Formula 1 cars have been steadily getting heavier over the past decade – last year’s minimum weight was 798kg. Frequent criticism from drivers, who have expressed their dissatisfaction with this trend, has made the issue of reducing car weight one of the FIA’s top priorities when drafting new regulations.

“We feel that in the recent years cars have become a bit too bulky and too heavy, and we’ve sort of gone a bit on a diet,” said Nikolas Tombazis, the governing body’s head of single-seaters, during a December briefing with a select group of media including *GP Racing*. “What we plan to do is to have a reasonable reduction of downforce for these cars, and a very, very large reduction of drag.

“This lower downforce means that a lot of the loading on components such as suspension, etc, etc, will reduce and then will enable the teams to reduce the weight consequentially.

THE NEXT GENERATION OF CARS IS LIKELY TO BE SLOWER – THE QUESTION IS BY HOW MUCH

current 2000mm. There will also be changes to the wheels. The 18-inch rims are expected to be replaced by 16-inch ones and, according to Tombazis, the wheels themselves will become smaller and narrower.

All of this should result in a weight reduction of 40-50 kilos, according to FIA calculations. At the same time, Tombazis

We also believe there will be a reduction because of the dimensional changes.”

Although the regulations are not yet finalised, the FIA is aiming to shorten the wheelbase from the current maximum of 3600mm to 3400mm. The cars will also be made 100mm narrower, down from the

insists that once the governing body has set a new limit, it won’t raise it again – as it did at the start of 2022 – regardless of any pressure from the teams.

“Clearly it will still be a challenge for the teams to achieve that low weight,” he said. “And we know they’re not going to have an easy ride there. But we’re going to stick to the weight limit we’re going to impose and we won’t be inflating [it] upwards again.

“They will just have to push harder to reduce the weight if they can’t make it.”

The overall concept will remain the same. It will still be ground-effect cars, as the FIA believes that this is the most appropriate concept for good racing. The challenge for the rule makers is to remove the grey areas which allow teams to introduce designs that disrupt the airflow to the pursuing cars. Tombazis believes the FIA has a clear understanding of how to achieve this.

“The 2023 season had a small worsening of the close racing features,” he noted. “The cars had degraded a bit in their ability to follow each other closely, and we think we understand why, how, and what we need to do. We believe that for the next round [of rules in 2026] we’ll achieve a much more robust close racing solution.”

Improving the ability of cars to follow each other has taken precedence over overall speed. The next generation of cars is likely to be slower – the question is by how much.

“It’s really not a huge factor,” Tombazis said. “It’s going to be very close to now. I think we’re going to be within a couple of seconds or something like that. But even if it was five seconds slower, we’re not going to be sweating too much.”

An important difference will be the moveable aerodynamic

The shape of things to come in 2026

The minimum weight of 798kg will be reduced by approximately 40-50kgs



parts, which will help reduce drag on the straights. Exactly how the wing-level adjustment mechanism will work is not yet known. However, the aim is to avoid situations where the new power units run out of battery power on tracks with particularly long straights.

Red Bull’s Christian Horner said last summer the chosen

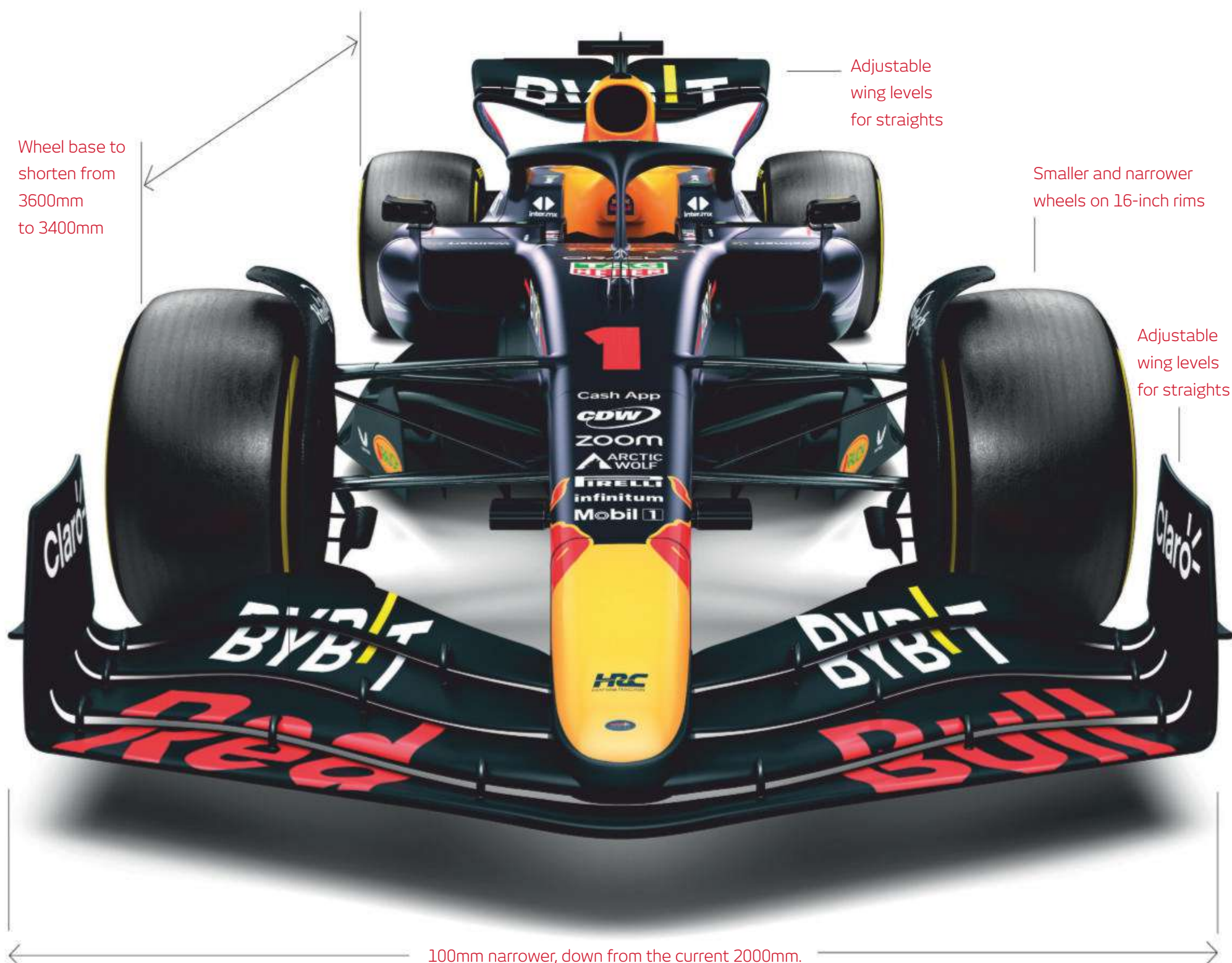
02

AUDI QUASHES QUIT RUMOURS

New CEO happy with F1 after all

03

KOMATSU STEPS UP AT HAAS



Red Bull created the most successful F1 car ever in 2023. If it intends to still be on top come 2026 the car will be smaller and lighter

formula for dividing power output between the ICE and electric engine would, on certain circuits, force drivers to downshift before reaching the braking zones. According to Tombazis, the FIA has never regarded such a scenario as being likely.

“These were comments that were probably a bit premature, because we hadn’t completed the work yet,” he said. “We

never believed that was a disaster scenario, because we knew there were solutions. We believe that the combination of low drag on the cars, with the way that energy can be recovered or deployed, achieves a speed profile of these cars which is very similar to the current cars.

“So the cars won’t be reaching the top speed in the middle of the straight and then derating or anything like that. That’s not going to be the case.”

Apparently, moveable aero will entail both the front and rear wing levels changing on the straights. At the same time, some form of DRS will remain, too, as a tool for overtaking.

“Whether it will be an additional change of an aerodynamic component on the straight, or an additional change of the aerodynamic component in the corner, or whether it will be part of the energy of the engine, which of the three, we’re still doing our best simulations to arrive to the best possible solution,” Tombazis said. “What we don’t want to have is cars basically diving past each other on the straight. We want cars arriving close to each other at the braking point and there being a fight, and drivers having to use their skill.” ▶

WHY AUDI HAD TO RE-COMMIT

02

It wasn't too long ago that Audi found itself having to repeatedly deny rumours that it would enter Formula 1. Now, having announced its decision to launch a works F1 programme after all, the German manufacturer is in the awkward position of having to quash speculation that its planned debut will not take place.

Speculation about a possible U-turn on Audi's way to Formula 1 was largely provoked by a CEO change. Markus Duesmann, who had overseen the decision to initiate an F1 programme for 2026, left his position at the end of June. He was widely regarded as one of the main proponents of an F1 entry and the same could not be said for Gernot Doellner, his successor. Doellner took over at the helm of Audi in early September but, in line with VW Group policy, refrained from commenting publicly on the state of the company during his first 100 days in office.

The autumn produced the main wave of speculation about the end of a programme that had not yet really begun. Wild rumours even predicted the sale of Sauber's already-acquired shares to another manufacturer – most paddock whispers identified Toyota as a potential buyer.

The fact that Sauber had been running under the Alfa Romeo banner last season served to fuel the gossip, since it meant team management were reluctant to comment on their future with Audi, a rival car brand. However, at the final round of the last year's championship in Abu Dhabi, team representative Alessandro Alunni Bravi categorically denied there was any doubt about the direction of travel.

"The commitment of Audi was really strong from the very beginning," he said. "The F1 project has been approved by the Audi management board, confirmed by the Supervisory Board of Audi and then confirmed by the

After months of rumours to the contrary Audi, through its new CEO, has confirmed its commitment to enter F1 in 2026



Supervisory Board of VW. It is a commitment at every level within the Audi and VW Group.

"The change of the CEO doesn't change this approach, because it was not a decision of a single individual or the board, it was a decision of the group."

However, only Doellner could set the record straight – and he did exactly that in his first interview after the aforementioned 100 days had elapsed.

Speaking to German business publication Handelsblatt, he said: "There is a clear decision from the board of management and the supervisory boards of Audi and Volkswagen that Audi will enter Formula 1 in 2026. The plan is in place."

However, insiders suggest that the initial speculation wasn't unfounded, but rather a byproduct of certain circles within Volkswagen and Audi trying to get the board to consider the possibility of abandoning the F1 programme. But even if such moves had been made, Doellner's words have dispelled any doubts.

Even if there really was no reason to question Audi's commitment, the rumours – which have been circulating for months – could have hindered the recruitment campaign Bravi has been undertaking with Sauber CEO Andreas Seidl. Potential recruits, including high-profile drivers, may have been put off by the speculation.

Nevertheless, Audi's factory team is still two years away from competing in F1 – and until then Sauber will be ►

NEWS IN BRIEF... NEWS IN BRIEF...NEWS IN BRIEF...

HONOURS



RED BULL team principal Christian Horner and former McLaren boss Ron Dennis were recognised in King Charles III's New Year Honours. Horner gets a CBE for services to motor racing, and Dennis is knighted for work in industry and charity,

FIA

The FIA's Formula 1 structure will have to be reshuffled as two of its staff have recently left the organisation. Sporting director Steve Nielsen, who was only appointed at the start of 2023, has been followed out of the door by technical director Tim Goss.

ENGINES

Williams has extended its customer engine deal with Mercedes through the new power unit regs in 2026 and up to 2030. Alpine's Bruno Famin had also indicated Renault is still willing to supply engines to Andretti for 2025, if Andretti's entry is approved by F1.

RIP

Two-time CART champion, 2003 Indy 500 winner and former McLaren F1 sporting director Gil de Ferran died at the end of December, aged 56. Last year McLaren recalled him as a consultant to help restructure its technical department.



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racing under a new banner. Following the end of its contract with Alfa Romeo, the team sold the naming rights to its sponsor Stake. The outfit's official name is now Stake F1 Team.

STEINER HITS THE ROAD

03 In a development which will bitterly disappoint both the viewers and the producers of Netflix's hit TV show *Drive to Survive*, Haas team principal Guenther Steiner left the organisation in early January. He will be replaced in that role by director of engineering Ayao Komatsu, while the team plans to recruit a Europe-based CEO in the coming months.

The Haas setup is unusual in that while it has a notional headquarters in Kannapolis, North Carolina, the race shop is located in the UK (in Banbury), while much of the design strength is based in Maranello. The team has enjoyed a close relationship with Ferrari ever since industrialist and racing magnate Gene Haas first registered an interest in entering F1 in 2014, initially taking advantage of the FIA's 'listed parts' scheme to use as many Ferrari components as permitted.

This business model has had to change in the past few years as rules relating to intellectual property have been tightened up. Haas got off to a strong start when it joined F1 in 2016, finishing eighth in the constructors' championship – but struggled once it had to plough more resource into design and development.

Steiner began his career as a mechanic for Mazda's team in the World Rally Championship, latterly graduating via Prodrive and Ford to senior roles within Jaguar's F1 team and Red Bull's NASCAR outfit. He has been part of the Haas F1 setup from the planning stages, while Komatsu joined for 2016, along with Romain Grosjean, whom he had been race-engineering at Lotus.

Although Steiner's colourful character and predisposition to expletive-laden outbursts have given him and the team a somewhat higher profile than a resolutely back-of-the-grid team might otherwise enjoy, *GP Racing* understands that ultimate owner Gene Haas is dissatisfied with results, particularly in the past season. Given the maturity of the technical regulations and the impact of the budget cap – including an influx of Ferrari design personnel who have been moved off the Scuderia's payroll – it was expected that the team might close the gap to the midfield.

The Haas announcement confirmed Steiner's departure "with immediate effect".

"We have had some successes," it quoted Gene Haas as saying, "but we need to be consistent in delivering results that help us reach our wider goals as an organisation."

Steiner (right) leaves Haas after being with the team since the start. His replacement is Komatsu (left)



GP RACING UNDERSTANDS THAT ULTIMATE OWNER GENE HAAS IS DISSATISFIED WITH RESULTS, PARTICULARLY IN THE PAST SEASON

F1 MASTERMIND

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- Q2** Which is the only GP that Pierre Gasly has started from the front row?
- Q3** Which team has won more world championship GPs: Williams or Red Bull?
- Q4** Max Verstappen, Sergio Pérez and Carlos Sainz won GPs in 2023, Which was the last season with only three winners and who were they?
- Q5** True or false: Fernando Alonso has never won the opening race of an F1 season?
- Q6** Who am I? I started 38 GPs from 1956 to 1961 for BRM, Vanwall, Ferrari and Yeoman Racing, winning six times and claiming three pole positions.
- Q7** Who was Jos Verstappen's final team-mate in F1: Enrique Bernoldi, Justin Wilson or Nicolas Kiesa?
- Q8** Logan Sargeant was the first American point scorer since Michael Andretti in 1993. But who was the US driver before Andretti to score points?
- Q9** In the Covid-hit season of 2020, which three circuits hosted two races apiece?
- Q10** Who are the two drivers to have won the Chinese Grand Prix driving a Red Bull?



1 8 2 2021 Qatar GP 3 Williams (114 to 113) 4 2015, Lewis Hamilton, Nico Rosberg, Sebastian Vettel 5 False (he won in 2006 & 2010) 6 Tony Brooks 7 Nicolas Kiesa 8 Eddie Cheever (1989) 9 Red Bull Ring, Silverstone and Bahrain 10 Sebastian Vettel, Daniel Ricciardo



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THE F1 ANALYST

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PICTURES  motorsport IMAGES

worked. And some of it fundamentally is that the teams don't get to understand the drivers' qualities because they no longer really have a test programme and a test facility in an authentic environment."

The reduction in entries since that period in the 1990s has also made life more difficult for the aspiring stars.

"Opportunity is less with 20 cars on the grid. When I got into F1 in 1991 you had to prequalify because there were extra small teams around and it gave you opportunity. Now the eye of the needle has really slimmed down. When you've got guys who have six, seven, eight-year contracts with one team, it blocks pathways."

Mark's current business has a number of professional drivers on the list; none of them is currently in F1 but he feels that making a full career as a driver is a challenge in any category.

"For me it isn't easy, period. If you're going to analyse it there's probably fewer than 500 drivers in the world in all categories of motorsport who are actually full professionals. F1, NASCAR, World Rally, Australian V8s, Indycar; when you start to analyse professional racing drivers, there aren't many on that global scale. Whatever the formula is, it's going to be tough. If a young driver coming through

doesn't show exceptional talent and doesn't have an exceptional amount of funding to start with, then it's a really difficult process."

Occasionally however, that exceptional talent is recognised – as shown by Oscar Piastri's brilliant debut season having snatched the opportunity with McLaren.

"That sums it up," says Mark. "There's one in a million that will make the grade. If you don't hit home in every formula and cap it off with a big gold trophy, the chances of getting there on a steady escalator are slim. F1 can see what's available when there's enough talent there yet contracts can still take time. Even Piastri had to sit out of racing for a while."

Meanwhile the wider McLaren Racing business has also worked well with Jake Hughes, a driver of Mark's group who was supported in developing the relationship to be able to take on a first full season in Formula E and receive a continued contract.

"We sold into McLaren with 'give the kid a chance' and 'take a risk'. Thankfully they did and I think they're very happy for it."

But Mark is all too aware that the more complicated aspects of F1 can lead to drivers vanishing quickly, just like former Formula E champion Nyck de Vries.

"It's just trying to understand that it's one thing driving," Mark says, "it's another thing taking the pressures of it and it's another thing to be able to deliver week in, week out. F1 will definitely extract the maximum; if you can't cope, you're not going to last long..."

WHY F1 IS A CLOSED SHOP TO NEW TALENT

The contrast of seeing 10 relatively unfamiliar driver names contesting first practice in the final 2023 race of Abu Dhabi versus an unchanged list of racers for the new season almost sums up the challenges for ambitious youngsters to step into F1.

Test and reserve drivers are a crucial part of any team, and the current FIA rules insist that each car must be driven by a rookie for at least one practice session in a season. The opportunity to connect with the latest F1 machinery seems like a useful step for the newbies, yet insiders are aware that a single free practice session isn't always meaningful.

Former F1 racer Mark Blundell became a test driver for Williams in 1989 at a time when F1 testing was a huge commitment and, as his career developed, he grabbed opportunities to go racing. Nowadays he is running Mark Blundell Partners, part of which is to help drivers take steps to professional careers and then keep them employed. He has experienced insight at all levels.

"Some of this FP1 stuff isn't a relevant point in question when you're looking towards a new driver



Blundell already had a wealth of testing experience when he made his F1 debut at the 1991 US GP

because it doesn't equate," says Mark. "Some of those guys will never be in F1. I did over 10,000km of testing for Williams in a year and as such they understood me, knew what they were getting and also the outside world could see what I was up to."

That level of testing was phased out by the FIA to cut costs to teams, whereas the number of races has rocketed. Nowadays young drivers often have to prove themselves on simulators but that is never going to be identical to a car on a specific day.

"Some of the biggest issues for younger drivers these days is that the business of F1 is so big that a team taking a risk on a new driver is quite high," says Mark. "Hence you see guys in their 40s still under contract and teams that have kept drivers for several years. They just can't take the risk of having someone new and it going wrong; on two or three occasions you see some guys come in and they're spat out of the system again because it hasn't quite



Back in 1991 there were more opportunities for young drivers as more teams meant prequalifying was needed

Blundell (with 2023 BTCC frontrunner Jake Hill) feels that the path to F1 for young drivers is harder than it has ever been



Even the star rookie of 2023, Oscar Piastri, had to sit out racing in 2022 because of the lack of a suitable race seat

It is very difficult to judge drivers like Zak O'Sullivan, who finished second in F3 in 2023, from just the odd FP1 session



For comparison Lewis Hamilton completed 1,954 laps of F1 testing before making his race debut



UNDER THE HOOD

PAT SYMONDS

PICTURES  **motorsport** IMAGES

demonstrable point which gave all of us the confidence that we could incorporate the engine into the Formula 2 car. At this stage Matti had built and run a four-cylinder engine which proved the concept and actually performed pretty well. For the F2 car we needed to upgrade this to a full race specification with a four valve per cylinder head, a dry-sump lubrication system and the various other accoutrements that a full race engine required. Matti set about this and we, while building the cars initially with the aluminium Hart engine, looked into the installation requirements such as the cooling system which was a bit of an unknown given the difference in thermal conductivity between aluminium and carbonfibre composites.

I was keen that we did not stress the engine as, in the early days of composite technology, we weren't certain of the properties of composites at temperature. In fact, a spectacularly unsuccessful experiment of trying to make the rear engine pontoons of the F1 car in carbon did nothing other than increase my concern over our lack of knowledge of this new 'wonder' material. As it happened, the design of the F2 car was ideal to relieve the engine of any structural road loads, so we continued with optimism.

The proposed engine was due to weigh in at 82kg, which was 24kg lighter than the Hart engine. In a series as closely contested as the European Formula 2 championship was in those days, the thought of getting to the weight limit with a significantly lower centre of gravity was extremely attractive.

So why did we never see a carbonfibre engine in a Toleman F2 car? The answer came down to money. Even with sponsorship from Marlboro and RMC the F2 works-supported programme was run on a shoestring. The development of the race version of the engine was never going to be cheap. Matti had interest from Ford, which was keen on running the engine in IMSA Capris, but this came to nothing. Undeterred, he carried on in IMSA with backing from Amoco Chemicals and the engine did race in its full competition version – I wish we had been able to bring it to a wider audience in F2. I do, however, gain some satisfaction from the fact that the IMSA car retained the engine mounting system designed for the F2 car – a small but significant emblem of

PLASTIC FANTASTIC: THE CARBON ENGINE

The first documented use of carbonfibre in motorsport was when some filaments gathered together as a light tow or string were used to reinforce the bodywork of the Ford GT40s that raced at Le Mans. The strands were laminated onto the glass fibre bodywork in a large criss-cross pattern which was very sparse since the cost of the fibres was \$1,000 per kilogram. That equates to nearly \$9,000 per kilogram in today's money.

At the time it was an exotic material and, while it promised much, the costs kept usage limited. Today a general-purpose fibre such as T800 is under \$30 a kilogram, cheap fibres half that and high-performance materials such as T1100 only around \$100 a kilogram. Properties have improved no end with those early fibres having a tensile strength of around 2.5 Gigapascals (GPa) while the soon-to-be-available T1200 will reach 8GPa.

To set some background to composite use in engines, in 1981, as well as being involved in Toleman's transition to Formula 1 from Formula 2, I was tasked with supervising the



Carbonfibre engine covers are used in road cars, but a largely carbonfibre engine has yet to make its mark in motorsport

deployment of the previous season's championship winning F2 design to customers via a replica built by Lola. This involved assisting works-supported cars run by Alan Docking for Stefan Johansson and Kenny Acheson. These cars were to use the Hart 420R engine but, early in the year, we came across a fascinating individual by the name of Matti Holzberg who was claiming he could build an engine largely out of carbonfibre.

While this seemed a fanciful idea, a little due diligence convinced me that what he was proposing was not just feasible – but that he had taken it to a



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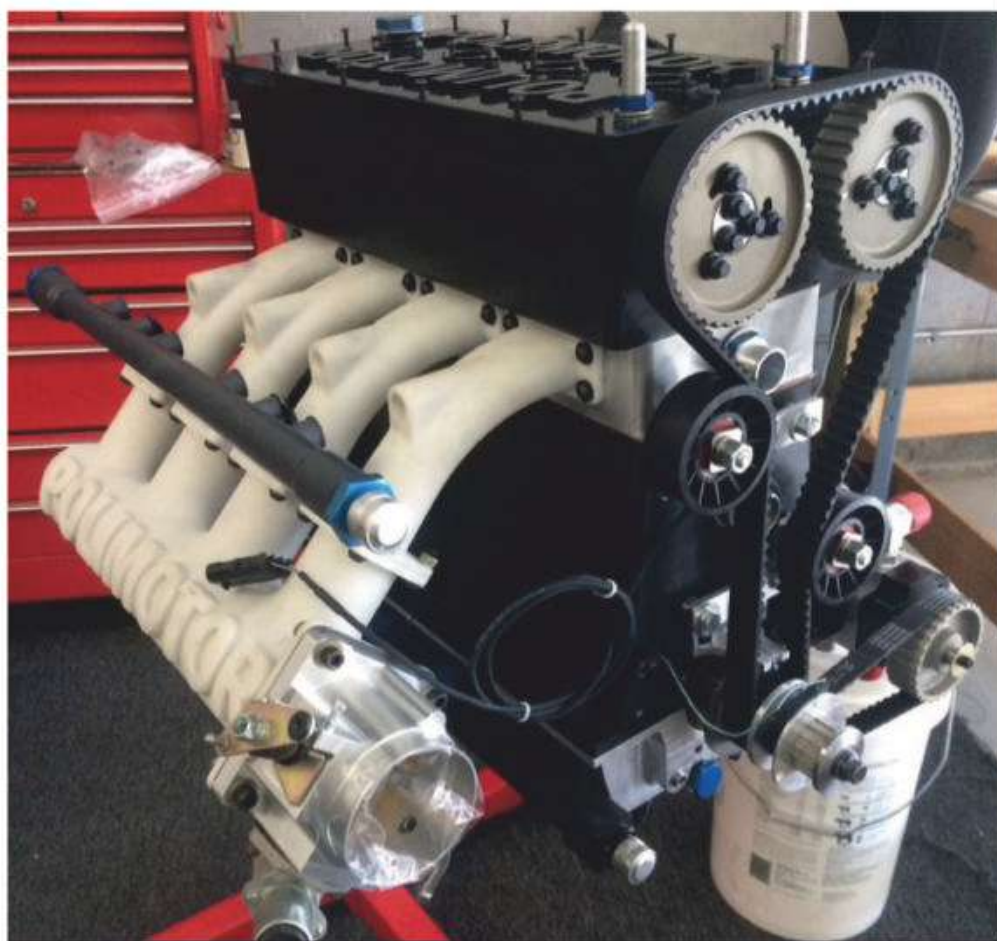


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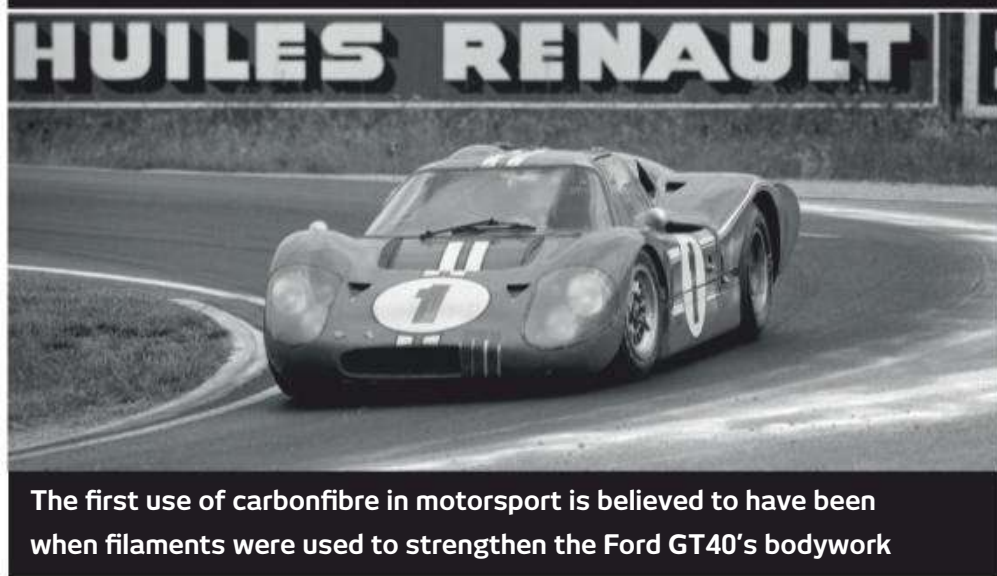
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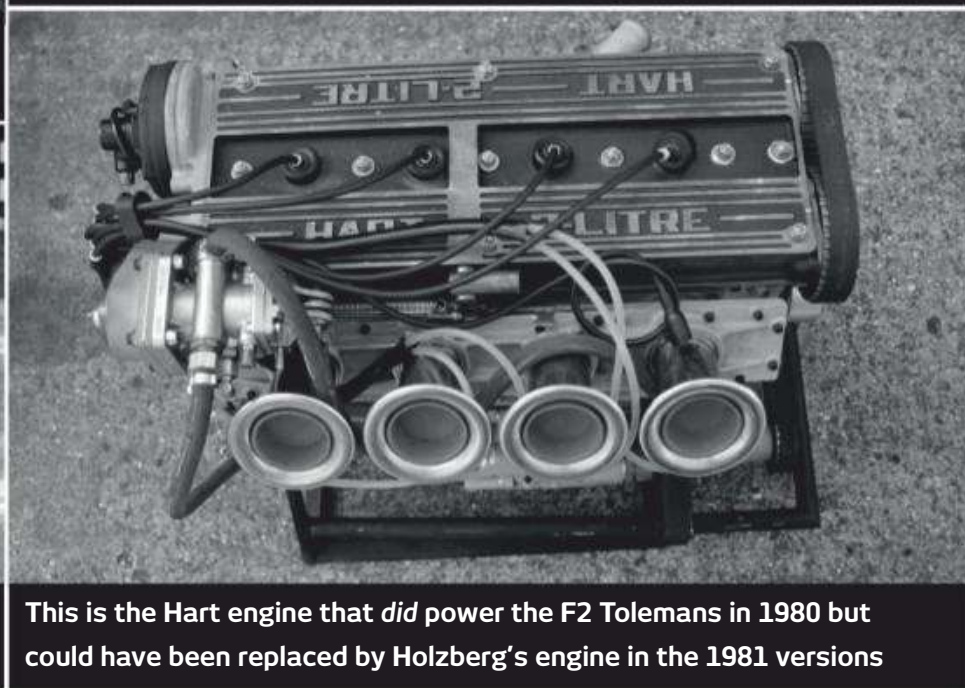
The Polimotor 2 was the successor to the original engine that saw action in IMSA in 1985 and the British Hillclimb Championship in the '90s



The first use of carbonfibre in motorsport is believed to have been when filaments were used to strengthen the Ford GT40's bodywork



Matti Holzberg is still developing his Polimotor engine, using injection-moulded techniques rather than composite fabrication



This is the Hart engine that *did* power the F2 Tolemans in 1980 but could have been replaced by Holzberg's engine in the 1981 versions

its heritage. In the mid-1990s the engine also appeared, with some success, in a Vision in the British Hillclimb Championship.

So, forty years on, why haven't we seen a carbonfibre engine in F1, particularly given the incredible improvement in fibre properties and resin systems in that time? The answer, unfortunately, lies in regulatory prescription. It would be perfectly possible now to make a significant number of engine components from carbon composites even if certain items might still require manufacturing from materials with better high-temperature physical properties, but the regulations are very specific in this area.

The initiative started so many years ago by Matti Holzberg lives on through the Polimotor project and the latest version of the engine has moved from composite fabrication to injection-moulded techniques.

The majority of Polimotor components are now made from polyamide-imide resins with graphite, glass or titanium reinforcement

as a composite. As well as weight saving the components can reduce inertial forces within the engine, giving additional weight saving on some of the remaining steel parts. The temperature, time and other process variables differ between parts but, in general, the component is first injection-moulded and allowed to cool past its plastic deformation temperature. It's then post-cured by solid-state polymerisation at a series of

THE CONTINUAL DEVELOPMENT OF CARBON FIBRES AND THE RESIN SYSTEMS INVOLVED COULD ONE DAY SEE AN ENGINE WITH MAJOR COMPONENTS MADE OF 'PLASTIC'

temperature steps to increase its molecular weight. This is performed in an inert atmosphere which helps to expel by-products of reactions until the polymer is chemically stable.

While we're still some way off seeing such engine construction become commonplace even in F1, the continual development of carbon fibres and the resin systems involved could one day see an engine with major components made of 'plastic'.

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STRAIGHT TALK

MARK GALLAGHER

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HOW CHINA WORKED – JUST NOT AS F1 EXPECTED...

It is bizarre to consider a new season which starts on the last day of February and runs until the second week in December. Not only is it Formula 1's most ambitious ever calendar, it's the first to lay Covid to rest.

Isn't that in the past?

Not if you live in China, a country which hasn't hosted its Grand Prix since 2019. Notwithstanding further pandemics, when the cars exit the pitlane at Shanghai International Circuit on 21 April it will be five years and one week since Lewis Hamilton won the sixteenth running of the Chinese GP.

It's 20 years since that first event, a milestone in F1's growth which was questioned by some and yet was undoubtedly an important addition from a commercial perspective. Back then the thought was that some of China's giant companies would help fill the gap left by F1's soon-to-depart tobacco sponsors. This was somewhat naive.

Formula 1 was relatively unknown in China and

the country's larger companies didn't need a 'European' motor racing series to help reach domestic customers. Instead, the opportunity was for F1 to use its presence in the country to offer international brands unprecedented access to what was, at the time, the world's most populous country. One with increasingly wealthy middle- and upper-income households.

Around the time of the inaugural race, held in September 2004, I spent two months living in the Intercontinental Hotel in Shanghai's Pudong district. My task was to sell Jaguar Racing to Chinese investors and save the jobs of everyone employed in Milton Keynes.

If the team could not be sold it would be closed. 'No pressure'.

One of my main targets was Yu Zhifei, the man responsible for making the Chinese Grand Prix happen. A former football team boss, he proved to be initially elusive, then noncommittal when it came to the idea of creating a Chinese-backed F1 team. Somewhere in Shanghai there is still the 25%-scale wind tunnel model of a Jaguar in China Team Ford livery, a key element of that presentation.

Fortunately, the other person trying to sell Jaguar Racing, team

principal Tony Purnell, was having better luck with one of the team's sponsors, Red Bull. Dietrich Mateschitz was decidedly more enthusiastic than Yu Zhifei and, as is often the case, things worked out for the best.

Mateschitz bought the team, saved everyone's job and created Red Bull Racing. By the time the team started winning F1 races in 2009, Yu Zhifei had been jailed for embezzlement.

China, however, remained important.

Three months before my stay in Shanghai, Ferrari opened its first dealership on the mainland, customers having previously had to order cars via Hong Kong. Today it has 25 dealers, reflecting the importance of China for so many of the companies involved in F1. A quarter of all cars leaving Maranello's production lines are now sold in Asia, with China the major player.

Talk to Aston Martin or McLaren and the story's the same.

That's not the only change, however, for these days China's fast-growing companies are eager to sell abroad, to reach international markets and help build their own home-grown brands. This is a further opportunity for Formula 1 and, in addition to the Chinese automotive brands including Geely, MG Motor and BYD pushing hard for growth, there are plenty of consumer goods and technology companies eyeing international markets.

Twenty years later, the move to China has never seemed more timely.



Lewis Hamilton won the last Chinese GP to be run in 2019. The race makes a return to the calendar this year



Yu Zhifei, one of the men originally behind the Chinese GP, with Eddie Jordan in Shanghai in 2003

THIS MONTH

Gaurav Chand

Chief Marketing Officer, Cognizant

In 2021 the newly rebranded Aston Martin team announced Cognizant as its title partner. Chief Marketing Officer Gaurav Chand oversees all aspects of the IT company's marketing: creative, digital and communications. He explains why technology companies now find Formula 1 so irresistible

CV

2019-present

Chief Marketing Officer and EVP, Cognizant

2018-19

Chief Marketing Officer and EVP, CenturyLink

2013-2018

Senior Vice President of Marketing, Dell

2010-2013

Executive Director of Marketing, Dell

2005-2010

Director of Marketing, Dell

2000-2005

Brand Manager – Marketing, Dell

GP Racing: Tell us about your own journey and your previous work in Formula 1?

Gaurav Chand: I started in the industry about 25 years ago and spent a long time at Dell. My first stint in F1 was when we had a partnership with Caterham. At that time we learned a lot about the efficacy and effectiveness of F1 for a team partner. I came to Cognizant about four years ago and we initially started with Aston Martin to expand awareness of our brand.

Cognizant is a \$20bn business, employing 350,000 across the globe. We're a technology solutions company that is focused on aspects of digital transformation such as cloud modernisation or mission-critical app handling. Around 75% of our revenues are in the USA and Canada but if you look at the Formula 1 race schedule, over 80% of the races are in countries outside of the continent of North America – so it's an incredible platform to create awareness for a brand.

GPR: How can you leverage the value of Formula 1 for a brand like Cognizant?

GC: We are now three years into the partnership with Aston Martin and we've renewed for another five years. What we realised is that the market had changed drastically around us. When you think about Covid, demand wasn't a problem because every client was going through a digital transformation, so there was a ton of demand for our services – whether it was a retail store or a healthcare company. Fast forward three years and we're now in an economic crisis, there are a lot of other elements that are disrupting world businesses. Demand is now a challenge. So we're now flipping. Where we focused on awareness, we're now planning to focus on client engagement to create demand.

GPR: So what is the benefit of a partnership with Aston Martin to Cognizant?

GC: Firstly, it's one of the most iconic brands across the

INTERVIEW JAMES ROBERTS

globe. You get an immense lift on your own brand name based on the partnership and the alliances you forge. Secondly, having worked in Formula 1 with my previous companies, the most critical thing for a partnership to succeed is how willing and how flexible our partner is and that's something we get with Aston Martin.

This sport is so conducive to technology. A lot of people see a bunch of drivers and racing cars. What they don't see is elements of IOT [Internet of Things] that tell them exactly what the status of their car is.

Think about the cost cap. If we can help a team modernise their technology so they can deliver the same data at a faster pace and a cheaper cost, then we're helping the team save money to invest in aerodynamics and other aspects that can help the car go faster. That's where technology plays such an incredible role

GPR: Can you detail some of the work you're currently doing with the team?

GC: I'll start with the non-car stuff first. Fan engagement is a big deal for every team. How do you take all of your social media channels and point them in the right direction so the right message is reaching the right fan at the right time? We're helping Aston Martin with elements of that.

A lot of the F1 teams are running on dated infrastructure. The world has moved on. There's a lot of costs where you have to replace hard drives because a server fails. We took on that challenge and modernised to the cloud, so now there is more data available at a faster pace for a cheaper cost.

When it comes to the car, your average F1 fan knows decisions are taken based on data. With trackside IOT we have sensors all over the car that can monitor exactly what's happening with that car in real time. That can be shared with Mission Control at Aston Martin HQ in Silverstone, as well as being analysed in the garage. All of that data is being triangulated and the best decisions are being communicated by the race engineer to the driver during every on-track session, whether it's related to tyre strategy, battery life or fuel consumption – and we help in that arena.

PICTURE: ZAK MAUGER



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JAMES MANN

WILLIAMS

The race winner that *really* put
Honda's turbo on the map

FW10



At the turn of the 1980s few would have argued against Williams being the most technically accomplished team in F1. With the FWo7 and its derivative specs Patrick Head and Frank Dernie had created the ground-effect benchmark, hitting the ideal compromise between maximal underbody aerodynamics and ideal chassis stiffness. Alan Jones might have won the drivers' championship in 1979 had the car been definitively ready at the start of that season, and he showed everyone else the way in 1980; the following year team-mate Carlos Reutemann would have been champ but for his inexplicable flunk in the season finale. Tenacity and consistency, and the sad absence of Gilles Villeneuve and Didier Pironi, played a part in Keke Rosberg's 1982 title but so too did the FWo8, one of the best non-turbo cars of that season.

The trajectory from that against-the-odds victory was generally downhill, though. Already having the best non-turbo car was barely enough; by 1983 Williams was desperate to secure a blown engine. And even once the deal with Honda was done, the team was becoming aware that its chassis and aerodynamic performance had slipped behind the state of the art. 1984 was all about McLaren and John Barnard's beautifully integrated composite-chassis MP4/2 and TAG-Porsche turbo,



WILLIAMS FW10

very much the forerunner of the 21st century F1 cars shaped by aerodynamicists and engine builders working hand-in-hand.

In contrast the aluminium honeycomb Williams FW09 was boxy, rather inelegant and aerodynamically sub-optimal, largely as a consequence of the engine and ancillaries arriving from Japan as a technical fait accompli, with no indication of essential parameters such as cooling requirements. It's difficult to separate the vicious eccentricities of the FW09 from those of Honda's early V6 turbo; designer Frank Dernie has said the root of the handling issues which plagued Rosberg and Jacques Laffite through 1984 were mainly a factor of the team adopting unusual setups to ameliorate the effects of the engine's binary delivery. The RA164E's claimed 750 horses were said to arrive in one stampeding contingent between 10,300 and 11,400rpm – with little indication of their presence until that point.

Both Williams and Honda were going through a learning process of how to engineer a turbocharged car – and both

parties recognised they had to scale up their efforts. Williams already built composite components such as wings in-house, so constructing a complete car using these materials rather than aluminium was a natural step. This, and a season of learning about the V6's heat rejection characteristics would facilitate a less boxy shape for the FW10. Over the winter of 1984 into '85 Honda added massive resources to what had started out as a low-key exercise, tripling the budget and staff.

Another contributor to the effort was Laffite's replacement, Nigel Mansell, with two seasons of experience at Lotus with Renault's V6 turbo. Among his first observations was that the turbo lag caused by inertia in the comparatively large IHI turbines was dire compared with Renault's – smaller ones running higher boost pressures would be the way forward.

From inception Honda's 80-degree V6 RA turbos were based on a short-stroke version of its 2-litre Formula 2 engine, itself conceived around an oversquare piston layout. Programme manager Nobuhiko Kawamoto's theory had been that if the class-leading BMW four-pot's bore size could be replicated across six cylinders, Honda could quickly find half as much power again. The bore/stroke ratio of 90mm by 39mm enabled Honda to achieve a high rev ceiling relatively quickly but, as a consequence, torque was poor – exacerbating the feeling of peakiness when harnessed to a pair of turbochargers. ▶

A SEASON OF LEARNING ABOUT THE V6'S HEAT REJECTION CHARACTERISTICS WOULD FACILITATE A LESS BOXY SHAPE FOR THE FW10



Peak power was also down on rivals but the chief vice was terrible reliability; flexing blocks contributed to several DNFs but generally heat build-up in those large bores would be the cause, sending the pistons into (literal) meltdown.

In typical Honda fashion the resource expansion came with staff rotation as Kawamoto was handed a more senior job within the company, bringing in Yoshitoshi Sakurai to head the project with a new chief designer, Katsumi Ichida. Despite instructions to develop based on existing architecture, Ichida set to work on an entirely new design with a stiffer block and a new bore/stroke ratio of 82mm by 47.2mm. Until the new concept was ready for the scrutiny of Ichida's seniors, the team focused on mitigating the RA164E's piston issues and working with IHI to create lighter, freer-spinning turbo impellers.

So the RA164E lived into the 1985 season in the new composite-tub FW10. Unlike McLaren's chassis the monocoque wasn't laid up as one piece but as an inverted 'U' shape which was then bonded onto the floor section. Externally it followed similar principles to the FW09 though the engine cover and sidepods were noticeably slimmer and the nose lower and narrower. It also had to do without the lateral extensions to the rear wing which had now been outlawed.

The season got under way later than originally planned after the cancellation of the second Dallas GP. Thus the spectacle of *Dallas* actor Larry Hagman waving the field off went unrepeatd and instead the season began on April 7 at Jacarepaguá on the outskirts of Rio de Janeiro. Rosberg qualified second while Mansell, racing for the first time with the number five which would become his signature, started fifth, but engine trouble eliminated both early on. Mansell was fifth in Portugal, two laps down, while Rosberg spun off as Ayrton Senna claimed his first victory for Lotus in a race marred by dreadful weather. In San Marino Mansell was classified fifth despite being one of the six 'finishers' to run out of fuel. Brake failure had long since eliminated Rosberg.

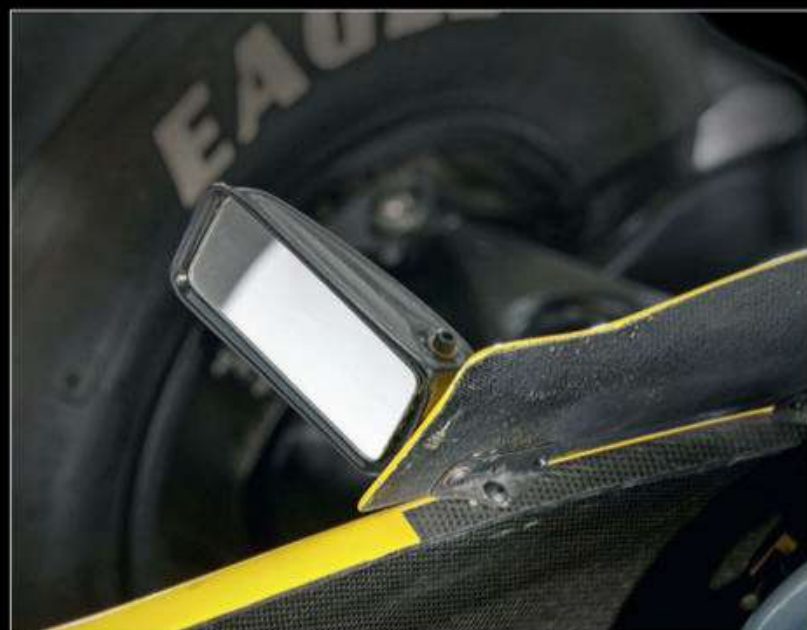
Both drivers finished outside the points in Monaco. In the month's gap before the Canadian GP the RA165E was finally ready. Its revised cylinder configuration and far higher compression ratio allowed for smaller turbos, and more optimal packaging to the forthcoming B-spec FW10 (which would feature pullrod rather than pushrod rear suspension). Friendlier to drive, it also offered 200bhp more muscle.

Rosberg and Mansell finished fourth and sixth in Montréal, on the same lap as Ferrari's victorious Michele Alboreto. Better was to come at the bumpy Detroit street circuit. In the neat-handling Lotus 97T Senna was untouchable in qualifying but his gamble to run the race without a pitstop failed when the track surface began to break up. Mansell had qualified second on the softer Goodyear 'B' compound while Rosberg, starting fifth, decided to use them in the race – and overtook Mansell early on, then kept Senna honest until the Brazilian capitulated with a pitstop. As other cars succumbed to brake problems and the crumbling track, or slid around on the harder 'A' tyres, Rosberg opened a lead he would not surrender even when soaring coolant temperatures forced him to pit for detritus to be removed from one sidepod. Both Mansell and Alain Prost crashed out at Turn 2, where the track surface was at its worst,

WILLIAMS FW10

NOW THAT WAS A CAR

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and Nigel hit the wall hard enough to injure his hand; Keke finished over a minute ahead of championship leader Alboreto.

Victory on Ford's home turf, on a weekend the Blue Oval announced a turbo engine project of its own (which would achieve little) made the result all the sweeter for Honda. And at the following round the V6 would fully unwind on a track with a famously long straight: Paul Ricard. Rosberg qualified on pole but Mansell – hand still strapped up after his Detroit crash – sat out the race with concussion after a deflating tyre sent him into the barrier at Signes. On race day Rosberg struggled for grip and balance and lost out to Nelson Piquet's Brabham.

It was at Silverstone that Rosberg and Honda would enter F1's record books with a typically bravura performance in qualifying from the abnormally brave Finn. Promoters and media had eagerly fuelled speculation that a lap averaging over the magic 160mph mark might be in the offing – and that this might be the last chance to see it. Car performance curbs were already being mooted (a cap on boost pressure would begin in 1987) and layout changes at this, F1's fastest overall circuit since Monza sprouted chicanes, were also in prospect.

Rosberg adopted an IndyCar-style asymmetric setup to optimise speed through the predominant right-handers. He was fastest on a rain-afflicted Friday but it was on Saturday that he found the next level. Despite a slide at the chicane – thanks to a deflating left-front – he broke the 160mph average with a 1m05.967s on his first flying lap. A heavy shower then put paid to the notion of anyone, even Rosberg himself, ►



**IT WAS AT
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F1'S RECORD
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BRAVURA
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IN QUALIFYING**



THE NEXT STEP WOULD BE TO EXTEND THE FW10'S PRODIGIOUS ONE-LAP PACE OVER A GRAND PRIX DISTANCE

stand until Juan Pablo Montoya (also in a Williams) averaged 161.45mph at Monza in 2002.

"It was probably one of the few occasions when I felt I had lost my self-control," said Rosberg. "I should have stayed in the garage and said: 'I've got pole, thank you very much.' But sheer enjoyment overtook professionalism..."

Williams was now back in the game. If that Detroit win had owed much to Rosberg's tenacity, this was a display of bravery and commitment in a car which now had the pace to challenge the frontrunners. Unfortunately Sunday demonstrated that the team's journey back to championship dominance was incomplete: McLaren's MP4/2B proved peerlessly quick and stable through Silverstone's fast sweepers and Alain Prost won by a lap. Both Williams cars failed to finish as clutch failure eliminated Mansell and a broken exhaust halted Rosberg.

eclipsing his performance.

Wrong. On a day which lurched between sunshine and rain – the clouds have always whipped over this windy old airfield – the track briefly dried. Out Keke went, bringing the crowd to its feet as spots of rain began to fall again – but nothing could stand in the way of Rosberg and his sizzling-hot tyres as he wrestled the twitching, sparking FW10 around in 1m05.591s. 160.94mph: a record which would

WILLIAMS FW10

NOW
THAT
WAS
A
CAR

No125

The next step would be to extend the FW10's prodigious one-lap pace over a grand prix distance. DNFs for Rosberg in three of the next four rounds indicated there was work to be done on reliability, too, though the responsible party for these failures wasn't always the occupant of the engine bay. As Prost drew level with Alboreto at the head of the title race, the role of sophistication and nuance over brute force was becoming clear: the Lotus 97T was nimble but let down by its Renault V6 turbo's thirst and fragility; Ferrari's 156/85 was quick but draggier and less endowed with downforce than McLaren's MP4/2B, especially at the rear. This, and the TAG-Porsche V6's more sophisticated engine management system which prioritised efficiency over top-end power, made the MP4/2B gentler on its tyres and more predictable on fuel usage.

The FW10B, with pullrod rear suspension at the heart of a tidier MP4/2B-like 'Coke bottle' rear-end shape, was ready for round 14 of 16, the European GP at Brands Hatch. Renault and BMW remained F1's quali-boost kings so it was no surprise to see the Lotus and Brabham of Brazilian rivals Senna and Nelson Piquet up front by a margin of almost a second. Behind them Mansell and Rosberg occupied the second row with Philippe Streiff and Prost on the row behind.

Former championship leader Alboreto was now almost irrelevant, qualifying 15th. Prost contrived to make heavy weather of getting the title over the line, taking to the grass on the opening lap and falling outside the top 10, while Mansell made a quick start and challenged Senna for the lead – before overcooking it at Druids, allowing Piquet and Rosberg ahead.


Rosberg made short work of Piquet but as he went to pass Senna on lap seven he received a sharp chop across the bows at Surtees, sending him spinning into Piquet's path. Keke's car survived the impact with just a puncture; in modern F1 an



incident such as this would have doubtless resulted in Senna being sanctioned by the stewards. Instead Ayrton carried on in the lead, now with Mansell just a few car lengths behind – until, two laps later, the leading duo encountered Rosberg leaving the pits. Clinically and cynically, Keke baulked the Lotus through Paddock Hill Bend, around Druids, then again at Graham Hill Bend, enabling Mansell to sail up the inside at Surtees. Further round the lap, Rosberg left the door open for his team-mate at Westfield and then slammed it in Senna's face (a piece of driving etiquette which in modern times would have resulted in him joining Ayrton on the naughty step).

Outrageous, but it enabled Mansell to build a gap for his first grand prix win, by 21.396s from the no-doubt frustrated Senna. Two weeks later Mansell qualified on pole and won at Kyalami in a South African GP overshadowed by rows over the country's policy of apartheid; Ligier and Renault boycotted the event, which would not return to the calendar until 1992.

As Kyalami headed towards the off-ramp, the final round took place in a new venue: Australia, and a hybrid circuit in Adelaide which combined the city's streets with a purpose-built section inside the Victoria Park racecourse. It was a pointer to F1's immediate future as Mansell and Rosberg qualified second and third and Rosberg ran out the victor by a 43.1s.

This was to be Keke's final GP win as he headed for McLaren in 1986, a fallow season for him as John Barnard refused to row back on the MP4/2's fundamental understeer balance. Mansell would be joined by Piquet, just as Williams stepped up a gear with the successor to the FW10, a car capable of devastating speed over both one lap and a race distance. 

RACE RECORD

Starts 32
Wins 4
Poles 3
Fastest laps 4
Podiums 4
Championship points 71

SPECIFICATION

Chassis Carbonfibre monocoque
Suspension Double wishbones with pushrod-actuated springs/dampers (pullrod rear on FW10B)
Engine Turbocharged Honda RA164E/RA165E 80-degree V6
Engine capacity 1494cc
Power 750bhp @ 12000 rpm / 950bhp @ 11500 rpm
Gearbox Six-speed Williams/Hewland manual
Brakes Steel discs front and rear
Tyres Goodyear
Weight 545kg
Notable drivers Keke Rosberg, Nigel Mansell



HOW TO FIX F1*

FEATURING

Smaller cars	Bigger engines	To DRS or not DRS?
'Goldilocks' tyres	The Saturday question	
*Does it need to be fixed?		

Domination by one team and driver inevitably causes mainstream interest in Formula 1 to sag. In the past it's led to knee-jerk calls for change. But quick fixes often come with unintended consequences. **Matt Kew** investigates which tweaks might improve the spectacle, and which ones might actively harm it despite all those good intentions...

WORDS MATT KEW PICTURES  motorsport
IMAGES





The 2023 Formula 1 season was inescapably unspectacular. That was in no small part thanks to Max Verstappen and Red Bull. The champion repeatedly snared pole position, led into the first corner, then disappeared 20 seconds up the road to complete a damp squib. He humbled his runner-up team-mate Sergio Pérez by 290 points. Meanwhile, second place in the constructors' standings fell to Mercedes, which failed to muster even half the score of Christian Horner's clan.

Amid that Red Bull monopoly, there's reason to believe F1 is on its way down the popularity mountain. With the gripping climax to the 2021 Lewis Hamilton-Verstappen grudge match in the rear-view mirror, TV audience figures that the series readily shared when they were increasing are now no longer disclosed. Instead, social media interactions are the go-to measure of growth. However, recent third-party analysis – rebuffed by F1 – suggests these too are on the wane.

Further back in the pack, all was not well either. Too often the racing was similarly sterile. The success of these ground-effects rules, devised to make it easier for cars to follow to pave the way for passing, was under scrutiny in their second year. Drivers were backing off to find cool air to nurse temperamental tyres and duly formed neat DRS trains, thus establishing a stalemate.

It's a classic case of unintended consequences. F1 commissioned sensitive tyres to introduce divergent strategies to improve the show. DRS was seen as a quick fix for an overtaking deficiency. Same for ground-effects and sprint races. Arguably, turning to sticking-plaster solutions is responsible for the spectacle shortfall. So, then, where might the championship top brass start should they consider more invasive reconstructive surgery to improve F1's longer-term health?

KEEP ON KEEPING ON

Is there really a problem to fix?

The starting point is to assess how far F1's drama deficiency stretches. In an alternative world where Red Bull's results are wiped, Hamilton theoretically pips Fernando Alonso to the 2023 spoils by 17 points, while Mercedes reclaims the teams' trophy by seven points over Ferrari. That paints a far more competitive picture, indicating the solution is simply to restrain the runaway team.

Trouble is, rivals were full of admiration as the RB19 set about winning a record 21 grands prix. They weren't calling for the FIA to kneecap the Milton Keynes creation because, as the paddock proudly says, F1 is a meritocracy. The best team

usually wins. That's been the case since Tazio Nuvolari was in nappies. As such, a laissez-faire approach should be maintained.

Mercedes motorsport boss Toto Wolff says: "If somebody is doing a much better job than everybody else, you can't stop that as a matter of fact. It is us and Ferrari and all the other teams that have to do a better job to compete with Red Bull. We can't change anything."

Granted, F1 has resisted anything as overtly interventionist as success ballast or power-restricting Balance of Performance measures, which are rolled out to level the playing field in sports and touring cars. Nevertheless, legislators do have previous for stepping in to hobble the pre-eminent force of the time. Williams was the biggest loser from the 1994 ban on 'active cars' while the 2006 mid-season mass-dampers

prohibition was aimed squarely at Renault.

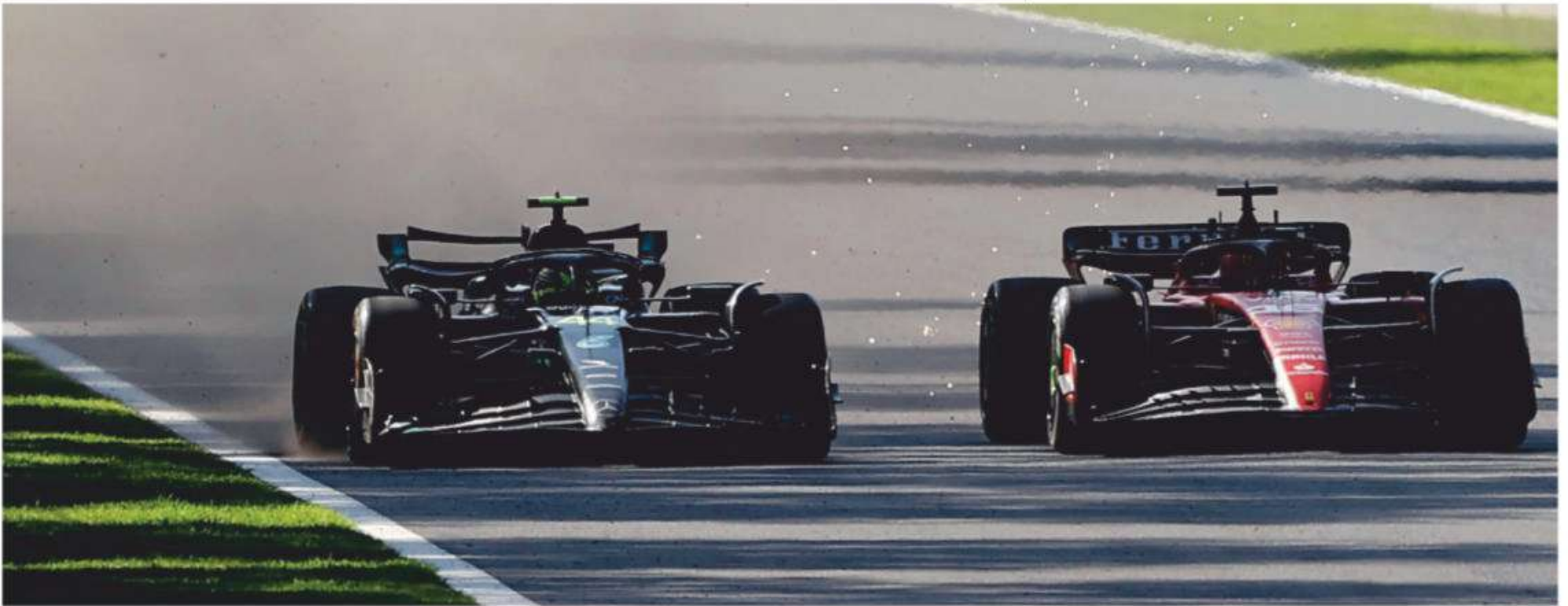
Something similar would be harder to impose this time. It would look like a witch hunt since Red Bull has no single standout feature to outlaw. Team technical director Pierre Wache explains: "[The car] is average good for everything. It's not very good in one aspect. Fundamentally, I would say we didn't do a fantastic job. I was more surprised by others who didn't do as good a job."

Beyond Red Bull, all drivers were more vocal about DRS trains and overheating Pirellis than in 2022, the first year F1 revisited ground effects. ▶

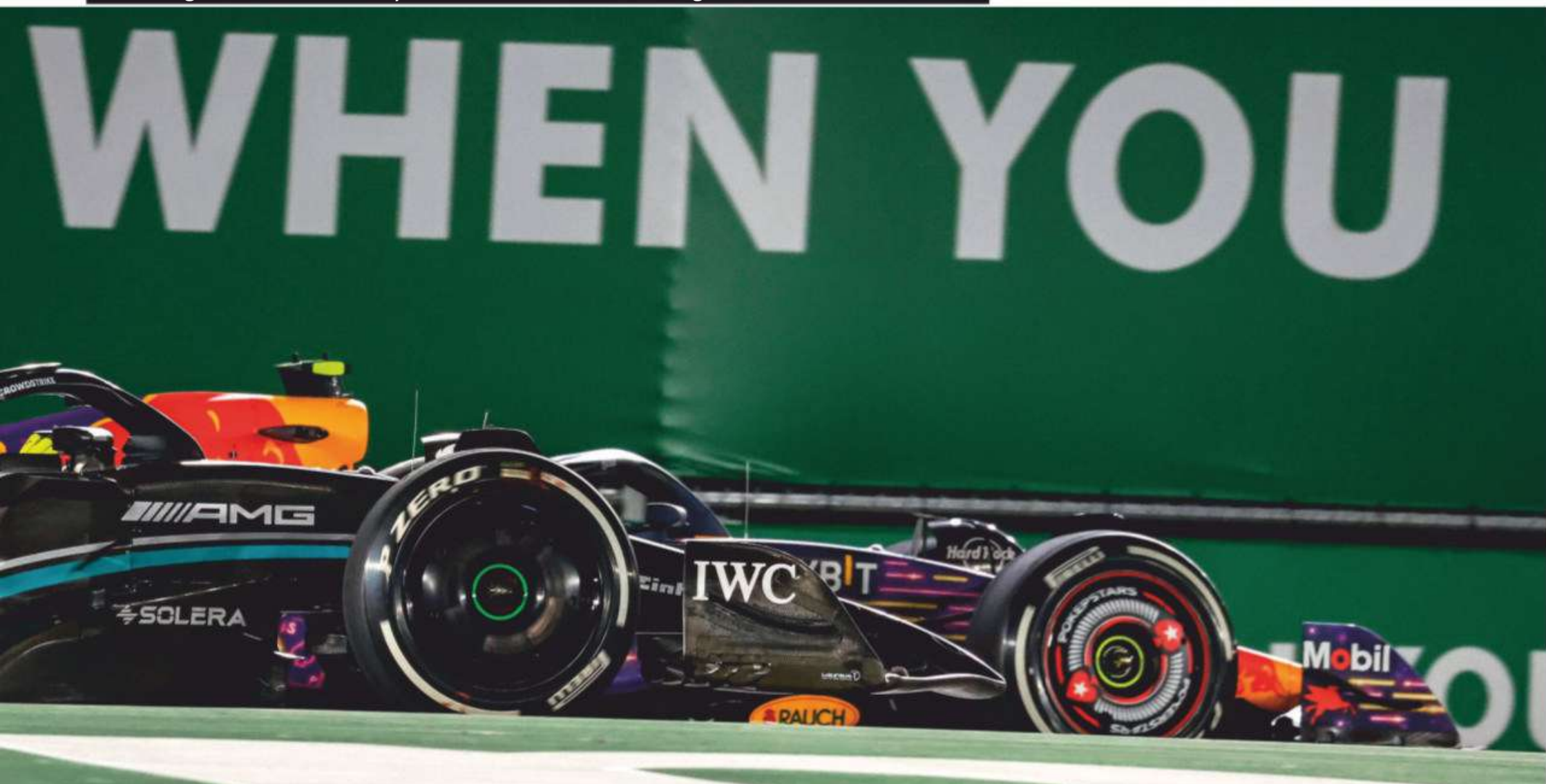




The banning of mass dampers in 2006 was designed to slow reigning champion Renault as it pressed onto a second consecutive drivers' and constructors' title double



Without Red Bull, Hamilton (above) would have been champion by only 17 points.
The average number of overtakes per race (below) matched 2022's figure





The Williams FW37 in 2015. Since 2017 F1 cars have just got bigger and heavier, which doesn't make for great racing. This is being partially addressed in the 2026 rules reset

Wheels grew to 18 inches from 13 for 2022 but there is talk of them getting smaller again



“DRIVERS WOULD LIKE A SMALLER CAR BECAUSE THEY THINK, RIGHTLY SO, THAT WOULD BE MORE FUN TO DRIVE, POSSIBLY QUICKER, LIGHTER, AS IT WAS IN OLD TIMES. IT’S JUST A MATTER OF HOW YOU DEFINE THE TECHNICAL REGULATIONS. WE HAVE TO REMEMBER THAT OUR MAIN TARGET IS ALWAYS SAFETY” DIEGO IOVERNO

But the average number of passes per grand prix remained very similar: 39 last term played 38 the year before. Still, that marked a considerable jump over the 30-overtake mean from the revered 2021 campaign. That suggests current complaints of a dull season are grounded in the lack of a fight for first place. As such, if Red Bull isn't to be pegged back directly, the series might simply have accept that one or two more underwhelming seasons must play out to allow the cost cap and aerodynamic testing restrictions to reel in the leaders.

SMALL ONES ARE MORE JUICY

Lighter, more agile cars would make for better racing

With the fuel tanks brimmed and a driver strapped in, the cars were nudging 925kg early in 2022. Teams couldn't get down to the minimum weight limit for the start of the new-rules era, which prescribed a 65kg jump on the previous generation. Little wonder they look so cumbersome through slow-speed corners. It's a sensation that doesn't reward viewers or those nestled in the cockpit.

Since the overhaul left the underside of the car to produce 60% of total downforce, the sanctity of the floors massively increased. To protect them, drivers avoid clattering the kerbs so there's less variation in the lines taken through turns. This effectively makes the track narrower – exacerbating a 2017 shift to 'wide' cars when F1 ill-advisedly made smashing lap records the priority over how well the machinery could race. The good intentions behind ground effects are undermined if there simply isn't enough room to get the pass done.

Verstappen frames the issue: “Is the DRS zone

too short? Are the cars not good enough to follow closely? I think it's a bit of a combination of both. The cars are probably too heavy, they're too stiff, so you can't really run a kerb to try to find a bit of a different line. Everyone is driving more or less the same line nowadays.”

Concessions to the width and weight woes are in the offing. The next-generation car model arriving in 2026 will be 10 centimetres narrower, have 20cm lopped off the wheelbase and a 40-50kg diet is mooted. Plenty of that saving will come from the wheels and tyres. The rims growing from 13 to 18 inches for 2022 was inspired by a half-baked desire to boost the resemblance to road cars. A new 16-inch design is expected to cut tyre width by 10%, which will save weight and reduce dirty air.

Pirelli motorsport head Mario Isola says: “The target is not a secret, that is to design lighter cars, more agile cars and tyres are a part of the weight of the car. So it can be that we have to supply smaller tyres.” He adds that shrinking the rubber is the primary way to save a few pounds since Pirelli already invests in lightweight technology.

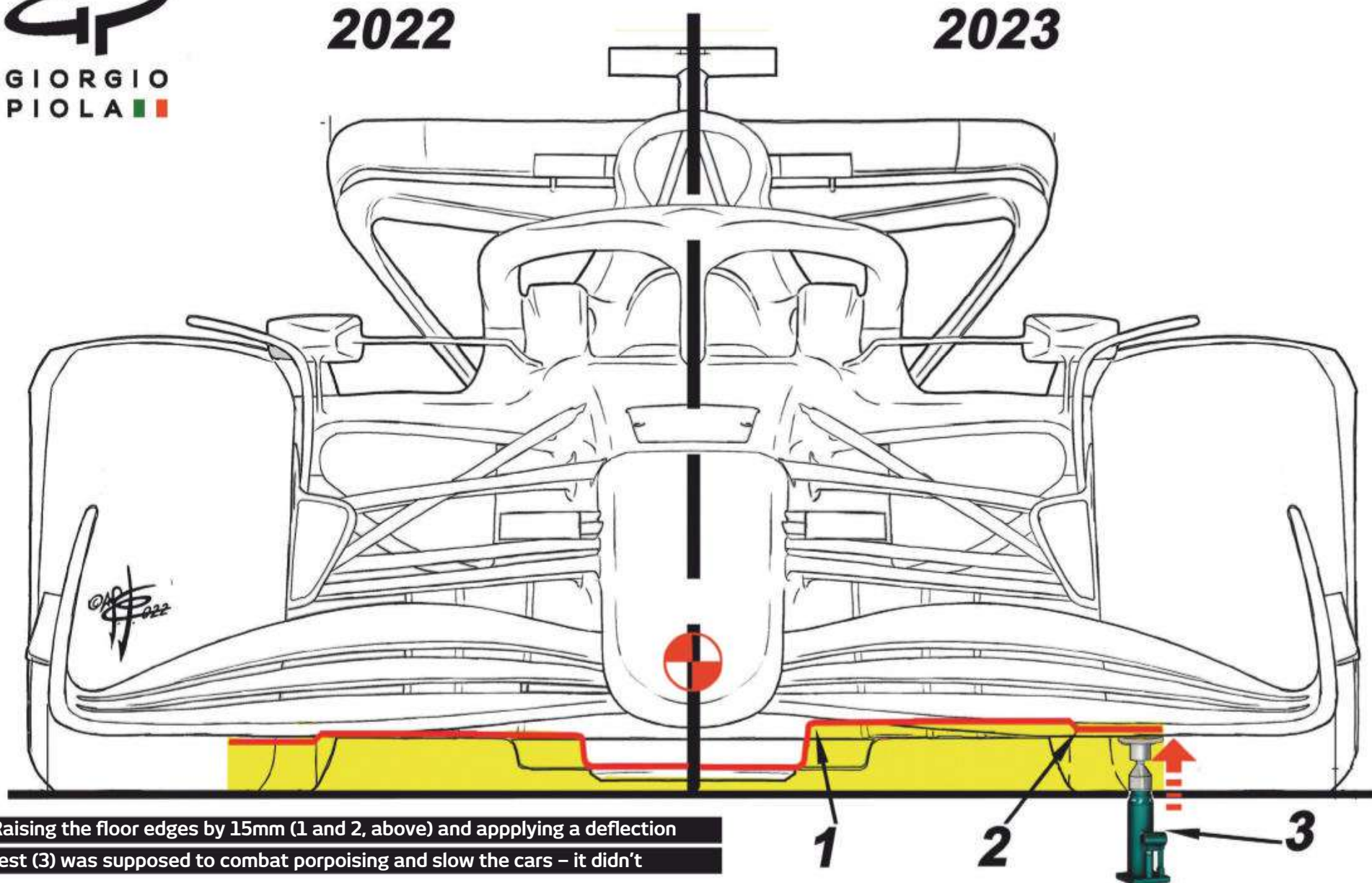
Ferrari's new sporting director Diego Ioverno stresses that there are limits to slimming down, particularly with how the monocoques and crash structures can be modified. “Drivers would like to have a smaller car because they think, rightly so, that would be more fun to drive, possibly quicker, lighter, as it was in old times. It's just a matter of how you define the technical regulations. We have to remember that our main target is always safety.”

Even a 50kg saving feels a little unambitious, though, once you consider the 2026 cars will have a smaller footprint, less rubber, plus the power units will ditch the complex Motor Generator Unit-Heat. Albeit adopting more active aero will offset some of the power losses.

A vocal minority argue that, thanks to the

2022

2023



Raising the floor edges by 15mm (1 and 2, above) and applying a deflection test (3) was supposed to combat porpoising and slow the cars – it didn't

development of sustainable fuels, a return to large-capacity V10s is now viable to ditch even more weight. But the new engine specification was shaped around increasing the output of the electrified part of the hybrid powertrain to entice OEMs Audi and Porsche. That framework is now rubber-stamped, meaning F1 will stick by its replacement for displacement until at least 2030.

PIRELLI'S STICKY SITUATION

How quick-fix aero solutions led to stalemate

It's a thankless task to be F1's sole tyre supplier. If the rubber is working well, praise is in short supply. When misbehaving, criticism comes from all directions. The current construction is firmly on the naughty step. Isola concedes: "When the drivers are not in clean air, they struggle to follow each other... we started to have comments about overheating. Teams are doing something on the aero package that is disturbing the airflow in the back, so they lose downforce when they follow another car."

The chagrin stems from a 15mm raise to the floor edge for 2023, an FIA sticking plaster applied to combat porpoising. The tweak was also forecast to hurt lap times by 0.5 seconds. But teams recovered this performance drop-off in double-quick time by aggressively adding downforce over the winter. Isola adds: "We don't know how much they are going to develop. After three races, they already reached the

level of downforce that was predicted for the end of the year."

Enabled by a less-prescriptive-than-feared rulebook, the cars evolved beyond expectations to offset the ground-effects shake-up's good intentions. After 2022, when drivers felt they could follow one another more easily, dirty air levels are spiking again. For the chasing car, the P Zeros suffer severe thermal degradation in the turbulence. It compels drivers to back off in search of clear air. They duly create an impasse in the form of a DRS train.

FIA single-seater director Nikolas Tombazis says: "There were a few particular areas of the car where there were some loopholes we didn't

manage to close soon enough. That worsened, for example, the front wing endplate area, wheel furniture area, brake ducts."

At least the way forward has been shown. When the field went out for a bitterly cold November night race in Las Vegas, overheating was all but eradicated – resulting in a thoroughly entertaining encounter. Pirelli wants to replicate the scenario on the Strip whereby tyres are harder to warm. But proper analysis to inform an upgraded construction is in its infancy so new boots likely won't land until 2025. By then, another year of tedious races may have played out, and the cars will have developed further. The rubber is constantly playing catch-up. ▶

The most obvious of F1's short-term fixes has been DRS, but if cars need to back off because of dirty air from the car in front, then its use can just result in a DRS train





Tyre overheating wasn't an issue in Las Vegas, due to low temperatures, and it showed the way forward in terms of exciting action – apart from at the very front

If the spectacle is to improve, Pirelli can't go too far the other way by devising compounds capable of taking endless punishment. Isola frames the balancing act: "I believe that most of the action on track is due to tyre [wear] and how you're able to manage. If you reduce that, I am convinced that the risk is to have a train of cars because obviously, if you can push, I can push, everybody can push."

Some believe a resolution could have been found by now. Pirelli, which has renewed terms with F1 until 2027 with an option for a further year, is valued at close to £4billion. Bridgestone, the rival bidder that failed to take over the supply deal, is worth over £21bn. Perhaps Pirelli's much smaller wallet has resulted in a research and development budget that's not conducive to producing those 'Goldilocks' tyres to cure F1's spectacle shortfall.

THE DRS OF PERCEPTION

A crutch F1 can't do without?

DRS is F1's most overt sticking plaster, ushered in for 2011 as a supposedly temporary fix for a dearth of overtaking. But the most vocal advocate among the hierarchy for getting rid, Formula 1's motorsport managing director Ross Brawn, handed in his notice at the end of 2022. The remaining movers and shakers haven't taken up the cause.

Drivers thumbing a button to open a rear wing flap has too often made passing a formality rather than something to be savoured. Arguably, it's the threat of an overtake rather than the move itself that generates the spectacle. See hallowed defensive drives from Ayrton Senna against Nigel Mansell in Monaco in 1992 or Fernando Alonso

keeping Michael Schumacher at bay at Imola in 2005. Critically, both blockbusters arrived when victory was on the line. Now in a period of one-team dominance where Verstappen is too often allowed to scamper to the spoils, it's left to low-stakes midfield DRS moves to struggle to get pulses racing.

The switch to ground-effects was a route to DRS being put out to pasture since cars could follow more easily. But dirty air making a major comeback has hit pause on Brawn's cause. People are instead discussing the merits of an even more restrictive rulebook to restore the improved show for longer. DRS being an overpowered overtaking aid isn't a talking point at a time when drivers can't get close to their opponent so settle into uniform intervals to neutralise any effect it might have.

What's more, for 2026, both front and rear



Leclerc. The pair took turns checking their speed, losing track position over the detection lines to gain DRS and surge back past. Hardly a purist's dream, but entertaining nonetheless. Although, those dices were predicated on having a multi-car battle for the lead. To focus on a rear wing flap as the solution to F1's current drama deficiency is to focus on the wrong thing.

The most obvious substitute for DRS is a push-to-pass system, as used in IndyCar. For those offended by the gimmick of a movable rear wing, drivers could more subtly activate a brief power boost to defend position or launch an overtake. But that feels like swapping one quick fix for another rather than getting to the root of the problem.

HOW DO YOU SOLVE A PROBLEM LIKE SATURDAY?

If sprints are here to stay, make them more useful

Under the ownership of Liberty Media, F1 operates to a policy of 'more is more'. Although there wasn't a fatal flaw with the traditional weekend model (three practice sessions, qualifying and the GP), chiefs saw fit to shake up the schedule to get the turnstiles off their hinges for three days rather than two. That was via the introduction of sprint races.

F1 CEO Stefano Domenicali explained their 2021 introduction: "We are excited by this new opportunity that will bring our fans an even more engaging race weekend. Seeing the drivers battling it out over three days will

DRS CAN BE AN ASSET. WHEN THE FIA IGNORED ADVICE AND CUT DRS ZONES BY 50 METRES IN AUSTRALIA AND AZERBAIJAN LAST SEASON, THERE WAS PLENTY OF FINGER POINTING WHEN SNOOZEFESTS PLAYED OUT

be an amazing experience."

Sprint races generate higher gate receipts and help flog lucrative hospitality packages by giving punters greater reason to turn up on Fridays and Saturdays. The marketability benefits translate to TV as well. Even the most tedious of shortened Saturday races will garner more interest than anything mustered in practice. They increase the jeopardy: with less track time to perfect setup there's a risk the frontrunners might drop the ball, paving the way for an upset.

While the suspicion is that overall viewing figures are beginning to decline, F1 boasted an average increase of 6% in its weekend audience for sprint race rounds compared with their ▶

wings will become active to compensate for power losses from the engines ditching the MGU-H. To argue for DRS to be binned any time soon is futile. Even Adrian Newey admits: "F1 typically has been good away to popularise things on road cars... active aero has to be the future of road cars, so I think it's appropriate that F1 should be displaying the power of it."

Besides, DRS can be an asset. When the FIA ignored advice and cut DRS zones by 50 metres in Australia and Azerbaijan last season, there was plenty of finger pointing when snoozefests played out. In Vegas, 50 metres were added, and the most entertaining contest of 2023 duly unfolded – though cooler temperatures helping the tyres also had an effect. Likewise, the Bahrain and Saudi Arabian GPs that kicked off 2022 were spectacular for the protracted cat-and-mouse duels between Verstappen and Charles

There were some decent races in 2023 where DRS helped with battles throughout the field, such as Saudi Arabia, but at others it has created stasis in the midfield



F1 BOASTED AN AVERAGE INCREASE OF 6% IN ITS WEEKEND AUDIENCE FOR SPRINT RACE ROUNDS COMPARED WITH THEIR CONVENTIONAL COUNTERPARTS FROM 2022. GROWTH, NO MATTER HOW SMALL, IS GROWTH

conventional counterparts from 2022. Growth, no matter how small, is growth. So, when money talks, the most radical overhaul to the schedule in series history is going nowhere fast, even if sprints officially remain on a “trial” basis only.

United States GP promoter Bobby Epstein did suggest sprints weren’t a complete commercial success, though. He reckoned running one at the Circuit of The Americas in 2023 did little to boost ticket sales. He said: “It didn’t help. You have to decide at what point are people coming for the event, as much as they are for the sport. Why is Sunday still so strong if [Verstappen is dominating]? Saturday this year was a little bit less than Saturday last year, and yet we have a sprint race. That’s the only thing that moved.”

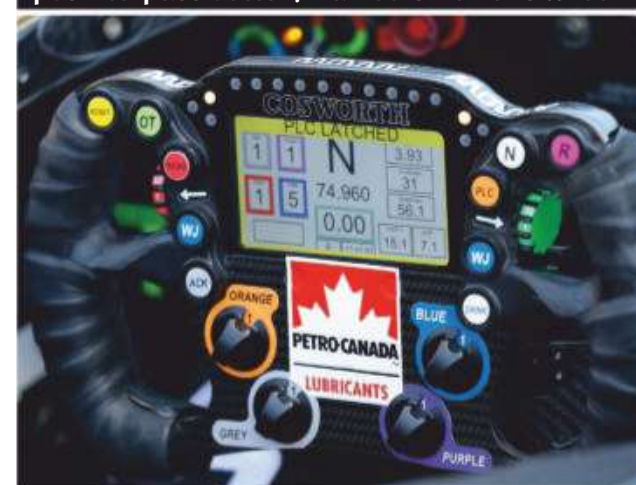
Since F1 isn’t turning its back on sprints any

time soon, it makes sense to continue beta-testing the process because the first two iterations have left plenty to be desired. Beyond increasing the appeal of Fridays and Saturdays, sprints were supposed to improve Sundays too. Their results determined the grids for the GPs so the order could have been jumbled. But this didn’t work as drivers backed out of late overtakes to protect their starting position. In an attempt to fix the fix, a 2023 schedule switch left Saturday to run as a standalone. A separate qualifying decided the sprint grid. But this left the truncated race to preview, and therefore spoil any excitement for, the first stint of the full GP. A Red Bull monopoly only made matters more unspectacular.

For many, the adoption of sprints was the moment F1 donned its water-skis and jumped

the shark. But if we’re already past the point of no return, there’s an argument for now blowing caution to the wind to make them entertaining. One-shot qualifying, a separate points table, sponsors coughing up a \$1million prize pot, reserve drivers taking part instead – what were formerly flights of fancy needn’t be off the table. Red Bull team boss Horner says: “We win a sprint race and nobody quite knows what to do because all the focus is already on the grand prix. Maybe one thing will be to have an enormous prize fund for the team and drivers. That’s always a big motivation. Then you will see some celebrating at the end! If you look at a football league, they have their main league and then have cup finals. ▶

An alternative to DRS would be IndyCar’s push-to-pass button, marked OT on this wheel



The Australian GP, aside from the drama of the multiple red flags, lacked excitement



Verstappen took the last sprint of 2023 in São Paulo, his fourth from six races, with Pérez and Piastri the other winners. The races didn’t provide the variety they did in 2022



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Maybe you have to look at something that is a little bit different like that.”

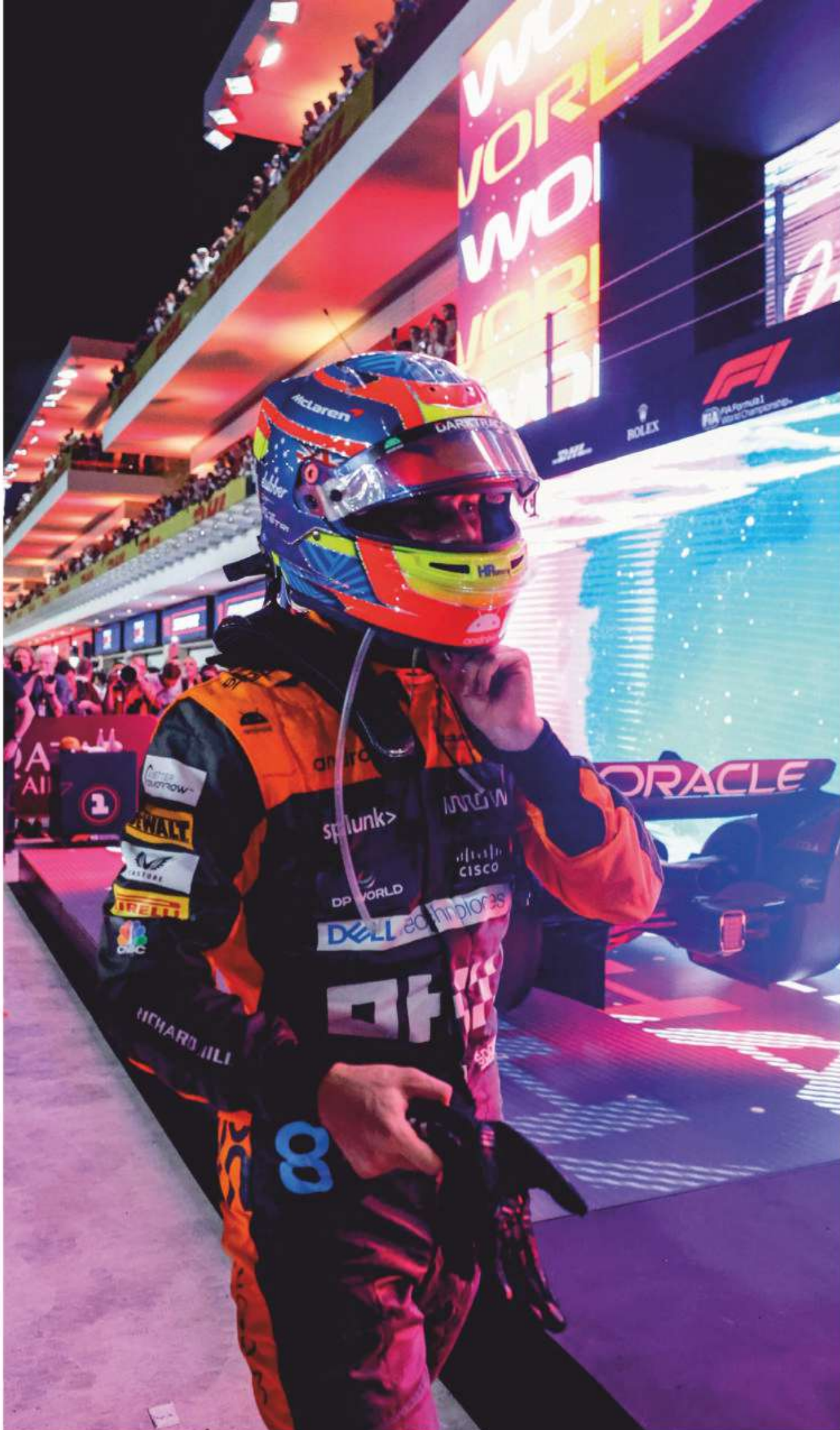
Stakeholders are aware of the disquiet. Tweaks are imminent, even if the F1 Sporting Advisory Committee failed to agree exactly what they should be at a November meeting. It’s likely that sprint qualifying will return to a Friday slot to be followed by the shortened race on Saturday and then GP qualifying later that day. That will plausibly allow for parc fermé to be reopened on Saturday afternoon to potentially mix up the competitive order – albeit, presently, it’s hard to envisage mere setup tweaks stopping Verstappen disappearing into the distance.

After two more tedious affairs in Austin and Interlagos last season, a surprising amount of

THE OBVIOUS OBJECTION TO REVERSED GRIDS IS THAT SHUNTS ARE MORE LIKELY, WHICH TRIVIALISES SAFETY, AND COVERING THE DAMAGE WOULD MEAN A RETHINK OF THE BUDGET CAP

momentum gathered behind the idea of partially reversed grids to artificially create overtaking. Heaven forfend! Will Logan Sargeant hang on for the spoils? How much progress can the frontrunners make?


The obvious objection is shunts are more likely, which trivialises safety, and covering damage would mean a rethink of the budget cap. But perhaps such thrilling, if even more contrived,



Sprints (below) are here to stay, but need a tweak. Piastri’s Qatar win (above) was the highlight of the six, but was overshadowed by Max’s confirmation as 2023 champion



contests boost audience numbers sufficiently to produce a financial shot in the arm. That would allow teams to spend on spares and repairs.

Second, artificially scrambling the order primarily to give Verstappen more to do would appear to be a thinly veiled way of hurting Red Bull, thus surely undermining F1’s precious meritocracy. Another mark against reversed grids is that sprints become so entertaining as to give the GP an impossible act to follow. But Liberty Media’s board members likely won’t lose too much sleep over that one. 



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ON THE GRID

Haas F1 chief mechanic **Toby Brown** explains the team's setup on the starting grid

INTERVIEW OLEG KARPOV

PICTURE ANDY HONE

1

"What you see here is our usual grid setup. It's very important that everything is in exactly the same place at every track we go to, so that the whole process of getting ready for the race goes as smoothly as possible.

"Perhaps the only difference is the barrier around the car. In this case, we qualified in the top 10, so we're quite high up on the grid, and that's the busy end of it. So we have that barrier – like other teams – to keep people away from the car while we work on it. The other end, towards the back rows, is less busy, so we can do without barriers there for the most part."

2

"Everyone working on the grid has a clearly defined role. There's a small portable table by the side for our systems engineer, who sends all the communications to the car, does the software changes and the necessary checks, and our Ferrari engine engineer – he's got his hand up, which probably means he's starting the engine. You can see them both working on their laptops, which are connected to the car. You can also see a small



power pack underneath – basically a battery to help start the car. The other two guys are our ERS engineer and Ferrari systems engineer."

3

"There are four guys on the grid responsible for fitting tyres to the car. You can see Troy here in front of the car. He's responsible for the left-front tyre – and there's a tyre gun on the ground next to him. We have two of those on the grid: one for both left and right front tyres and another one for the rear tyres as well. These are the guns we use in the garage, but not for pitstops – those are a bit more sophisticated and faster. On the grid we just need something simpler.

"Troy's other colleagues are next to their tyres. This picture was taken when there was still plenty

of time to go, so everyone was more or less relaxed, but the closer you get to the start of the race, the stricter the procedure becomes. With five minutes to go, you would see everyone in their respective positions."

4

"This is Matt Thompson, the number-one mechanic on Nico Hülkenberg's car. He's got a countdown clock and all the bullet points of what needs to happen and when: installation lap tyres off the car, race tyres on the car, blankets unplugged and so on. The tyre blankets, for example, are connected to the generator and they have to be unplugged with five minutes to go. There are several points like that, including the moment when the drivers have to get in the car and get strapped



in – which is the job of the guy who’s now on the other side of the cockpit.”

5 “On the side of the track is what we call a grid trolley. We use it to carry all the equipment we need on the grid: tyre blankets, the compressor or air supply for the guns, drinks, all the cables and the cooling fans that you can see on the roll hoop and sidepods. The grey box on the side is where the guns go when we’re done and ready to sprint back to the garage. There’s also a generator in there to give us the power we need on the grid. You can also put another set of tyres on top of it.

“There’s another Matt, on the left behind the trolley, he’s there to help push the trolley. Marek, our garage technician who specialises in tyres, is

next to him. And Bernardo, the guy on the right, is our engine technician.”

6 “There’s another grid trolley for two more sets of tyres. In this case, we only needed two – this picture was taken before the Qatar sprint, where we weren’t expecting any rain. At most other venues we would have a set of wet tyres ready on the grid. This trolley also has a generator, just in case we need it.”

7 “Behind the car you see one of our garage technicians, who is responsible for the grid setup, working with other tyre technicians to distribute the Pirelli tyres. He’s also responsible for the

grid trolley and distribution of air supply, tools and other equipment.”

8 “Drivers are the most unreliable element in the whole process. They can be late owing to other external circumstances. You can see Nico surrounded by three cameras after a good qualifying session, and sometimes he can be delayed by media commitments.

“Here he’s talking to our chief race engineer, Ayao Komatsu, who’s in front of him, and his race engineer, Gary Gannon, who’s behind one of the cameras. They usually go through strategy options and things like that before the race. Next to them is Nico’s physio Martin, who looks after the immediate needs of the driver.”



LET'S STAY TOGETHER

Sergio Pérez started last year promisingly but then everything went downhill. As his season dissolved in a slew of on-track blunders, speculation about his future naturally followed. Publicly at least, Red Bull is standing by its man...

WORDS ALEX KALINAUCKAS PICTURES  motorsport
IMAGES



“At the moment, I’m feeling very comfortable with the car.”

When Sergio Pérez spoke those words he was sitting just one point off the 2023 Formula 1 standings lead. He’d just won in Jeddah, his first victory of what was a fresh season. Two races later, leaving Azerbaijan, he was still only six points adrift and had matched Max Verstappen at 2-2 in the grand prix victory stakes.

Come the campaign’s conclusion, Pérez occupied the same spot in the standings. But the gap to his victorious team-mate was a Formula 1 record 290 points. Pérez didn’t win again after Baku, while Verstappen racked up 17 more victories on his way to another record-setting season total. Perhaps more damningly, Max’s solo points haul would have been enough for Red Bull to beat Mercedes to second in the constructors’ championship.

The differences keep coming simply because they were so many and so massive. But what really went wrong for Pérez in 2023 – and can he avoid these pitfalls in the season about to start?

Well, for Red Bull team boss Christian Horner, Pérez’s once-promising 2023 challenge took its most significant hit right after Baku: in Miami. On F1’s second visit to the Florida city, Verstappen turned ninth on the grid with Pérez on pole into

Sergio Pérez’s season summed up into two pictures. The smile covers those early races and wins but was gone by Miami and Monaco

a comprehensive defeat for his team-mate. Pérez later admitted he’d been too conservative on tyre management early on, while Verstappen was serenely climbing the order on a contra-strategy.

“The first four or five races he [Pérez] was very strong,” Horner explains. “And it was really after Miami [things went wrong] – I think that was a big, psychological blow for him, losing that race.”

POST-MIAMI VICES

The Miami race was hugely significant for two reasons. The first was the obvious points swing to Verstappen, who was simply never again under pressure points-wise as he had been on arrival. The other was what it did for Pérez’s confidence. Next up, in Monaco, he crashed hard in Q1. Horner says the “momentum that he built up” winning in Jeddah and Baku, “by the time we headed into Europe, it started to disintegrate”.

“Confidence is such a vital thing in this sport,” Horner adds of the element that has a particular pertinence in qualifying flying laps. On this front, following the Monaco round, Pérez failed to make Q3 (other than his Austrian sprint race front row) for another four events. When he did get back into the final qualifying segment, in Hungary, he finished just ninth.

Over the course of the season, Pérez’s average deficit to Verstappen in the top sprint and

qualifying sessions they contested together was 0.4 seconds. That’s with outliers such as wet sessions removed. It’s also actually an underestimate of Verstappen’s potential, given the only times he missed Q3 were due to his Jeddah driveshaft drama and Red Bull’s sub-par showing in Singapore, where he beat Pérez anyway.

“Max has the ability, confidence and skill to extract that moment of grip out of a tyre,” Horner explains of the differences between his drivers in qualifying in 2023. “Checo has to be more settled. There can’t be as many variables for Checo.”

In Barcelona, one week on from Monaco, Horner spoke of the need for Pérez to get the “pressure” of a first title shot “off his shoulders”. But the qualifying focus on both Pérez and Verstappen is important because it was where the RB19 was ‘weak’ in 2023. We place that word in scare quotes firstly because Red Bull still took 14 poles last year, and also because the team feels the advantage provided to the rest by new soft tyres on low fuel means “limitations of a certain car can be masked”, according to Verstappen.

Pérez reckons “the problems that we had really made me understand a lot more what I was doing with the setup, how I was setting up the car, which direction I need to go when I get issues”.

“So,” he adds, “It’s something that’s definitely gonna make us stronger coming [in 2024].”

Decoded, this means Pérez lost his way as Red Bull went through its typical ride height and wing level setup work through the weekends that formed the meat of 2023’s mid-season, while also trying to modify his driving style to emulate



Verstappen's results – something that first arose around the Barcelona weekend. Running through these efforts were the steering wheel 'tools' adjustments for brake bias, differential and engine braking that drivers can use to try and improve their through-corner handling balance as laps and stints progress. A big part of Verstappen's dominance last year was how he began to use adjustments to these to his advantage, starting in Miami.

THE ART OF FALLING APART

The preferences of each driver on car handling played an overarching role in how they ended up so far apart. Pérez prefers an understeering front, while Verstappen enjoys being able to tame a lively rearward balance – getting his turn-in done early and rapidly. This brings particular laptime gains over Pérez in low- and medium-speed sweeping turns, since Verstappen can get on the throttle earlier. Plus, by getting so much rotation

Miami, the moment of truth for Pérez in 2023. After qualifying on pole he was passed by Verstappen, who had started ninth

done early, Verstappen can actually open up the steering again and so lessen the tyre load during race runs. Trying to replicate Verstappen's approach appears to have knocked Pérez even further off course last year.

Red Bull sees the imbalance across its driver line-up on car handling as something of a fault. Technical director Pierre Wache says the team "failed" on this in 2023, but Horner nevertheless reckons Pérez was getting "stronger and stronger" on coaxing the best from the RB19 as the campaign ended. This was the result of an intense three-day stint in Red Bull's simulator after the Qatar GP, poring over his season's data after a particular poor weekend at that returning event.

Pérez arrived at the Abu Dhabi season finale with second in the drivers' standings secured, which gave Red Bull the championship 1-2 sweep it had never previous achieved. And

yet, the focus fell so intensely on Pérez's poor 2023 performances compared with Verstappen precisely because they fatally undermined the hopes of an engaging title battle even within a single team. Alain Prost against Ayrton Senna at McLaren or Lewis Hamilton versus Nico Rosberg for Mercedes this was not.

The logical extension of this part of the weak overall 2023 narrative was how Pérez's results might hurt Red Bull when the gap to the other teams is smaller. Or indeed erased altogether. Because all periods of F1 domination do end. And these questions were all wrapped up in the wider Red Bull group's transition through the succession ignited by the passing of company co-founder Dietrich Mateschitz in 2022.

It was clear early in 2023 that satellite team AlphaTauri could not simply make up the numbers at the foot of the F1 pack under the scrutiny of new Red Bull CEO of corporate projects and new investments, essentially the new top marketer-in-chief, Oliver Mintzlaff. While an assessment of a possible team sale ended in the decision to instead give the junior team more Red

THEY HAVEN'T BEEN ABLE TO RESOLVE THE LINE-UP IMBALANCE RED BULL HAS HAD EVER SINCE DANIEL RICCIARDO LEFT FOR RENAULT IN 2019. RICCIARDO IS A CANDIDATE TO TAKE PÉREZ'S SEAT SHOULD SERGIO'S COMPARATIVELY POOR FORM CONTINUE – EITHER FOR 2025 AS PER THE CURRENT CONTRACTUAL SITUATION, OR PERHAPS SOONER



Bull parts and even transfer more aerodynamic staff to the UK and its Bicester aerodynamics facility nearer Red Bull's Milton Keynes base, the power distribution across the two teams was altered. This change is understood to have strengthened Horner's position, while long-time key Mateschitz lieutenant Helmut Marko now faces an uncertain F1 future.

Even when their positions were as entrenched as they used to be in the previous decade at Red Bull, both Horner and Marko backed savage driver line-up decisions time and again. This brought them Verstappen and a second period of domination at the championship's head. But they haven't been able to resolve the line-up imbalance Red Bull has had ever since Daniel Ricciardo left for Renault in 2019.

Ricciardo is a candidate to take Pérez's seat should Sergio's comparatively poor form continue – either for 2025 as per the current contractual situation, or perhaps sooner if rumours about Red Bull dissatisfaction with Pérez prove to be true (see sidebar). The pressure for change will mount if Red Bull's rivals can close the gap this year.



Pérez with Horner in Azerbaijan. At the moment it seems that Checo has the backing of the Red Bull team principal

GET THE BALANCE RIGHT

Pérez maintains if he can “hit consistency, to build a platform” that will avoid what went so wrong in 2023 reoccurring in 2024. Again, he's hanging his hopes on maintaining the gains from that post-Qatar simulator analysis.

“That's my main priority,” he explains. “To be able to progress through the season. [Wherever] I start, it's just important that we can do a weekend [overall], keep evolving and keep getting better.”

Running against this are two elements. First, in the five events that followed Qatar last year, Pérez's qualifying deficit came in at 0.37s down on Verstappen – still a substantial gap. Indeed, Pérez never started on the front row again in 2023 after Spa ahead before the summer break.

And then there's Max. His own comparative ‘weakness’ early in 2023 – where he never lost the standings lead even as Pérez claimed those wins in the opening four rounds – was what raised hopes of a title fight that were dashed so soon.

Verstappen detests the understeer balance that

WAITING IN THE WINGS

Daniel Ricciardo

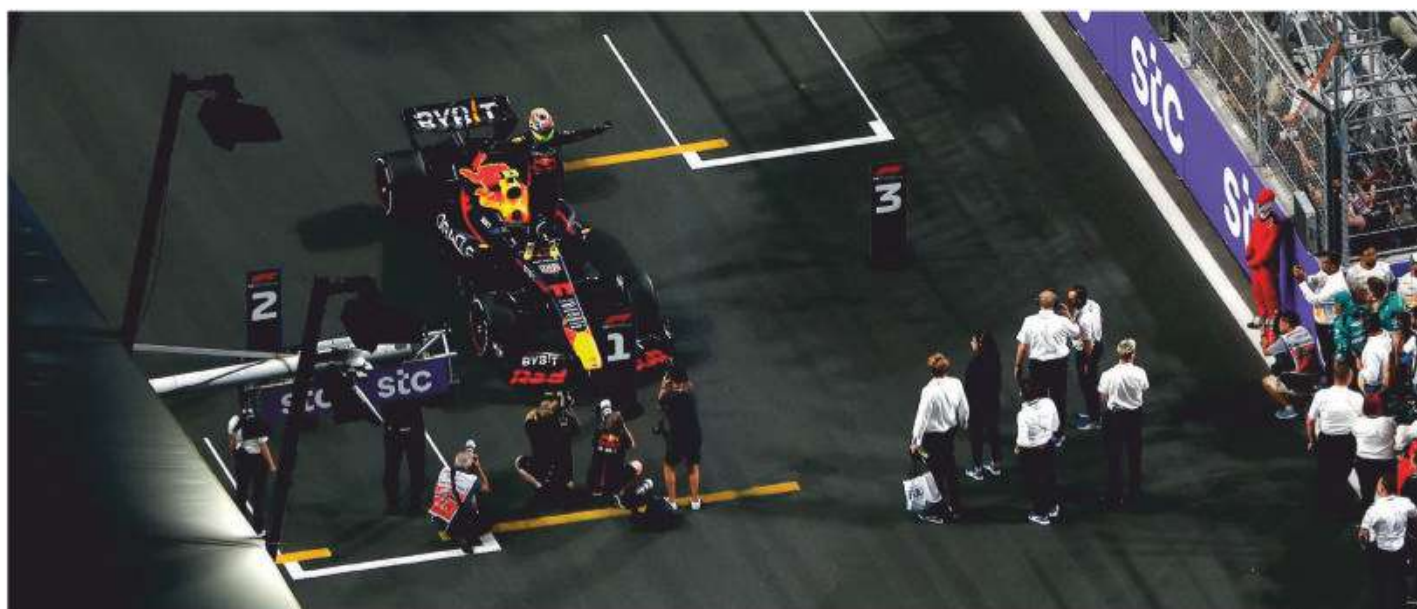
The favourite to replace Pérez, since Red Bull's management admits that was a key target for Dan when he began his comeback with AlphaTauri midway through 2023. That was disrupted by his Zandvoort crash but Ricciardo did enough in securing seventh (from fourth on the grid) in Mexico that Horner declared he "looked like the Daniel of old". Publicly, discussion is over a targeted 2025 promotion, but if there's really to be one last swing of the Marko driver axe, it could be sooner.

Yuki Tsunoda/ Liam Lawson

Grouped together because they're surely AlphaTauri's short-term future. If Ricciardo gained an early Red Bull promotion, it would be logical to expect the driver who matched his number of points finishes as his injury replacement to return. But Lawson would need to demonstrate his long-term worth at Red Bull's junior team. Tsunoda is about to embark on a fourth season there and that there is no momentum for a promotion speaks volumes, with his erratic form a big factor. Attention should instead go on Aston Martin's 2026 works Honda engine deal and what it might mean for Yuki's long-term future.

Lando Norris

Contracted to McLaren until the end of 2025. But, of course, this is F1; with enough will and, indeed, sufficient cash from Red Bull, he could join sooner. Horner has admitted to sounding Norris out "a couple of times over the years". Yet those are just the public utterances – McLaren insiders suggest Red Bull has continued to woo Norris (who was offered an early F1 debut with Toro Rosso midway through his 2018 F2 season) in subtle ways all through his five years at the top level. He and Max get on well, but his high performance level would risk destabilising Red Bull's relationship with its biggest asset. So, a shock Norris switch remains only a nice theory – until it happens in reality.



Happy days. Pérez claimed his second career pole in Saudi Arabia and took the win from a recovering Verstappen, who started 15th



The Monaco Q1 shunt gave Red Bull's rivals a look at the RB19's floor and started an awful run of qualifying woes for Pérez




By Mexico all Pérez could hope for was a first win on home soil and even that went badly wrong at the very first corner

is so rewarded on street circuits such as Baku, where 90-degree turns predominate. At that stage last year he was also still struggling to gel with a substitute performance engineer on elements including the steering wheel 'tools' settings.

Once they were fully aligned, the combination with Verstappen's improved feeling with the RB19 over a race accrued during his Baku defeat proved to be devastating. His progress also started as

F1 reached the higher-speed courses where Max could use his car-handling preference to expose the gulf in class between himself and Pérez.

Calendar changes for 2024 have brought forward Suzuka and pushed back Azerbaijan. Assuming Red Bull's dominance continues, this raises questions about whether Pérez can lay down even a stunted championship challenge given what came to be in 2023... 

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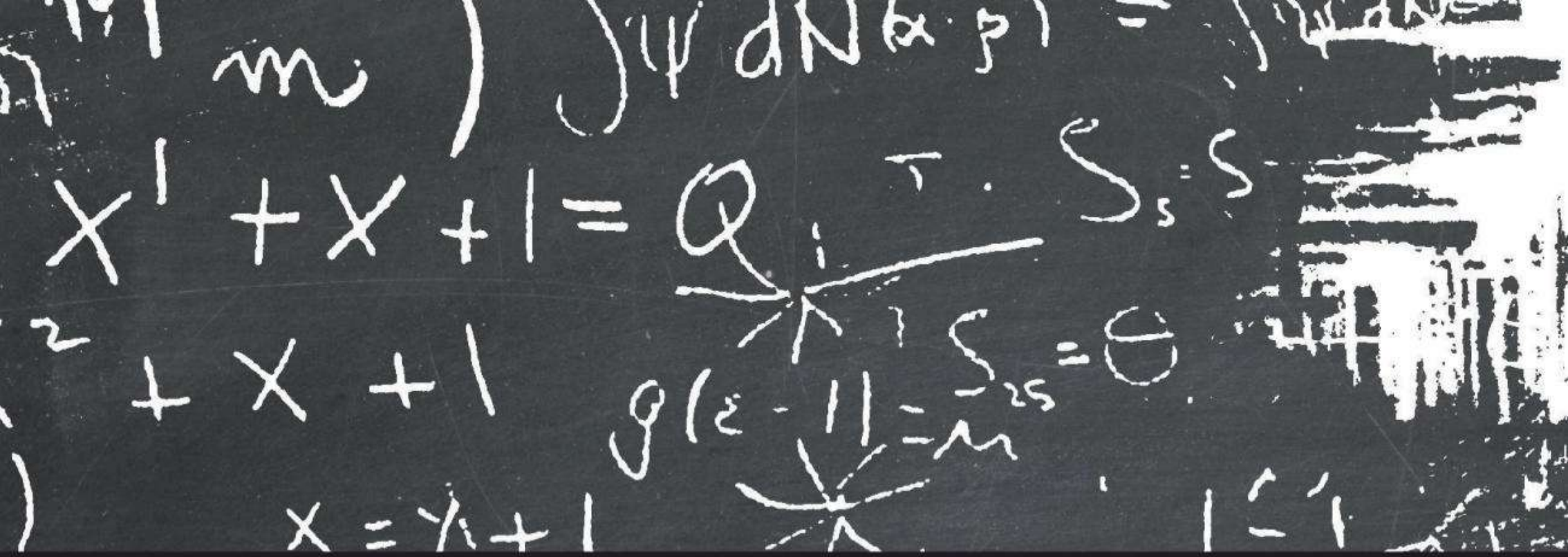
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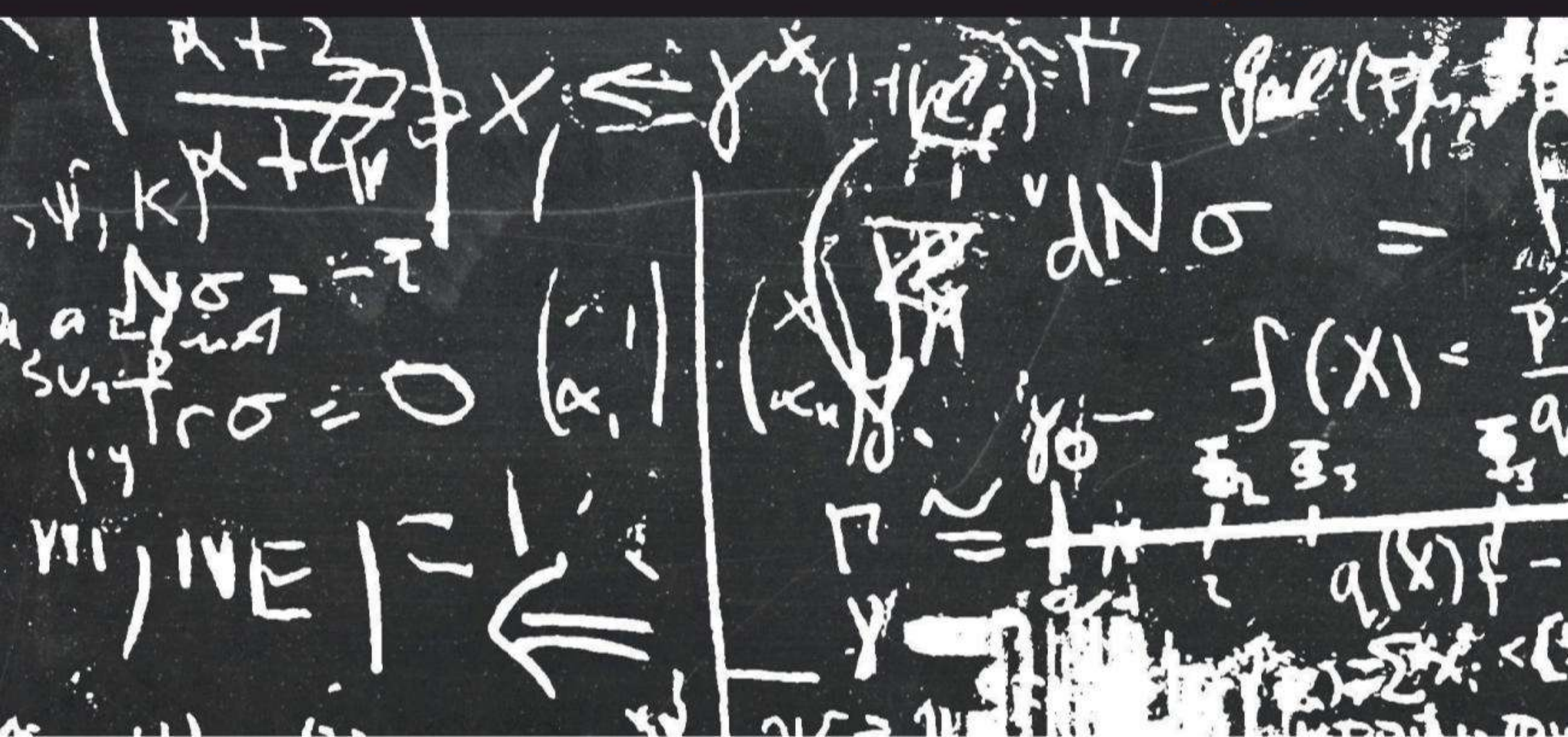
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BACK TO SCHOOL

McLaren provided the springboard for **Emanuele Pirro's** racing career – one which led him from developing championship-winning F1 cars to victory at Le Mans. Now he's back with a mission to do the same for a new generation of talent...

WORDS JAMES NEWBOLD
PICTURES  motorsport AND McLAREN IMAGES





IT HASN'T ESCAPED EMANUELE PIRRO that he's been rather popular of late.

Perhaps this should come as no surprise. After all, interest in the Le Mans 24 Hours, where the charming Italian claimed five victories for Audi between 2000 and 2007, reached an all-time high in 2023, the classic race's 100th anniversary year.

But rather than his exploits behind the wheel – which in Formula 1 peaked with fifth place for Benetton in the 1989 Australian Grand Prix – his continually pinging inbox has had everything to do with his appointment last April to head up McLaren's driver development programme.

"A lot of time is dedicated to responding to people because once you become director of a programme like this, you find out your number of friends worldwide increased dramatically!" Pirro tells *GP Racing*.

Following his retirement from racing in 2008 (although he made sporadic appearances two years later for the team owned by former UK science minister Paul Drayson) Pirro worked with the FIA, serving on various commissions and becoming a well-respected driver steward in Formula 1. This period developed in him a desire to "help motorsport improve if possible" and then, he says, "almost as a coincidence, this opportunity came along".

"For me it was really a perfect fit," he smiles.

That's because McLaren played such a transformational role in his early career. Little wonder he says the team "always had a sweet spot in my heart". The association goes back to 1988, when he was the team's Japan-based tester working closely with Honda on engine development. It followed a chance invitation from Stefan Johansson to film a Marlboro commercial in Phoenix at the end of 1987, a year Pirro had spent racing touring cars for BMW after two race-winning Formula 3000 seasons



New boy Gabriel Bortoleto with Andrea Stella, Pirro and Mark Temple (who also works across McLaren's driver development programme)

failed to yield an F1 berth.

McLaren boss Ron Dennis pitched the test-driver job without any promise of a race seat but, Pirro recalls, Ron suggested "by doing this you will develop an experience that might make you become appetible [a typically *recherché* piece of 'Ronspeak'] for a Formula 1 team", which exactly happened". He was called up by Benetton to replace Johnny Herbert mid-way through 1989 and then had two years with Scuderia Italia, all the while on McLaren's books pounding around Suzuka through its four years of domination with

Even when Pirro was called up to Benetton in 1989 (below) and raced for Scuderia Italia, he was still a valuable part of McLaren's test team



the Honda-powered MP4/4, 4/5, 4/5B and 4/6.

"This is almost crazy if you think about it now with the confidentiality," he says. "But this is evidence of how strong the bond was between me and Honda and McLaren. They trusted me and still kept me and asked me to do the work."

Pirro is also grateful to the team for not only paying for a race drive in Japanese F3000 with the Team Le Mans Reynard outfit in 1988 and '89 – which kept him race sharp until the F1 door opened – but also in revealing areas in his own game he could improve.

"McLaren gave me an opportunity to live and breathe in a state-of-the-art environment," remembers Pirro, describing the era as "probably one of the best racing periods of all time".

"I thought at the time I was a good racing driver with little I needed to learn, until I got to know [Alain] Prost and [Ayrton] Senna, and the whole team. It enriched me as a professional sportsman and also as a human being.

"That era was really something very special; the chemistry which was there, the quality of individuals, the bond, the leadership."



The name above the door may be the same, but much has changed from the McLaren of 30-plus years ago. However, Pirro has been deeply impressed by the team's direction of travel under Zak Brown and Andrea Stella, calling their leadership "so inspirational". He believes this is even more important than the strength of the Lando Norris-Oscar Piastri driving partnership or the team's improvements in infrastructure.



IndyCar ace Pato O'Ward was already in the programme when Pirro joined it and recently drove for the F1 team in FP1 in Abu Dhabi



At 29 Ryo Hirakawa is the oldest driver on the roster. The 2022 Le Mans winner has replaced Alex Palou as McLaren's F1 reserve for 2024

"Now McLaren is starting to live a dream period with very strong leadership," he says. "More than the new windtunnel, more than the new simulator, more than the pair of drivers who are arguably the best pair around or at least really, really good – apart from all these things, I think the big asset in McLaren is the human side, the leadership and the people at the helm."

Pirro is far too modest to include himself in that assessment. But throughout his career Emanuele was known for having an astute technical mind, a point evidenced by the profession of his two sons – both engineers working in motorsport. Cristoforo is a performance engineer on Valtteri Bottas's Alfa Romeo, while Goffredo is Prema's Formula 4 team manager. Unsurprisingly then, Pirro adopts an analytical approach to his new role.

"I take it very seriously and I want to use McLaren money very carefully," he says. "The target is to find the new Lando and the new Oscar, because as much as they are young, of course you need to have a backup plan. This is the purpose of the programme."

Pirro is clear, however, that the purpose isn't only to identify and recruit future F1 drivers, but also to make those under McLaren's wing the best they can be. The programme also serves as a potential talent pipeline for its IndyCar and Formula E operations, and to get the maximum return quality over quantity has been a priority. Pirro believes it's important drivers know that, if they deliver, they won't have several drivers of a similar age to compete with – reaching the top demands that "you have to become exceptionally good at the right time".

Upon his arrival, there were just three drivers on the programme: IndyCar aces Pato O'Ward

Growing the female talent pool

Attracting and developing more female drivers is a key goal for F1. The challenge has been to achieve scale. One of the biggest shortcomings of the moribund W Series was its lack of progression: Jamie Chadwick won each of its three editions before the championship hit financial trouble and folded in 2022.

F1 Academy, which has effectively replaced it as an all-female junior single-seater offering, has made sure to avoid that. Inaugural 2023 champion Marta Garcia (below) has secured a paid-for seat in Formula Regional European Championship by Alpine next year.

Another edge the Susie Wolff-led F1 Academy has on W Series is its close ties with Formula 1. All 10 F1 teams are represented: each will have a nominated driver on the 2024 F1 Academy grid, with 10 of the 15 174 bhp Tatuus T421 chassis – the same as used in the British and multiple national F4 contests worldwide – bearing an F1 livery. And the first outfit to commit to a driver was McLaren.

Twice a winner with Prema in F1 Academy this year, Bianca Bustamante will join ART Grand Prix as a member of McLaren's driver development programme. Hailing the move as "unreal", she said: "I'm so grateful for this opportunity as I believe I now have the best possible development structure around me to take the next step up in my career."

Williams has followed that precedent by adding its representative Lia Block to its driver academy, and more will surely follow.



(see p48) and Alex Palou plus 16-year-old Formula 4 racer Ugo Ugochukwu. After Palou broke contract and decided against joining McLaren's IndyCar operation, his role as F1 reserve was taken by Toyota's 2022 Le Mans winner Ryo Hirakawa (at 29, the eldest member of the programme). The roster has recently expanded to accommodate F3 rookie champion Gabriel Bortoleto (19) and Bianca Bustamante ▶

“I WANT TO USE MCLAREN MONEY VERY CAREFULLY, THE TARGET IS TO FIND THE NEW LANDO AND THE NEW OSCAR, BECAUSE AS MUCH AS THEY ARE YOUNG, OF COURSE YOU NEED TO HAVE A BACKUP PLAN. THIS IS THE PURPOSE OF THE PROGRAMME”



Bustamante has also joined the development programme recently, and will be McLaren's representative in the F1 Academy in 2024

(18), McLaren's representative in F1 Academy next season (see sidebar).

“The earlier somebody is embedded in the McLaren way of working, the more efficient they will be inside and outside the car once they sit in a Formula 1 car,” says Pirro. A focus on improving driving skills will be just one aspect of the programme; Pirro also believes in working on drivers' mind-management capacities.

He points out that the papaya team has “a strong tradition with a few very good examples of drivers being picked from an early stage”. Norris and Piastri are following a trajectory famously established by Lewis Hamilton.

“McLaren has got this in its DNA,” says Pirro. While Piastri was poached from Alpine's driver-development programme, he had in effect been parked for a season after winning the F2 championship and faced the possibility of more of the same. Norris was a runner-up (to George Russell) in F2 but had otherwise blazed a winning trail through the junior series; McLaren

backed him over the more experienced Stoffel Vandoorne for an F1 seat in 2019 and carefully coached Lando through his well-documented self-confidence issues.

“We believe at McLaren we are good at this,” says Pirro. “The contribution of McLaren to make Lando so strong today has been quite big. So, by picking people from a very young age and not having many of them, we believe that for a given amount of talent we can extract the best possible package.”



Describing a typical week, Pirro admits that McLaren's Driver Development programme is still in a growth phase. “Let's say the train is still accelerating,” he says, “not far away, but definitely not at cruising speed which means I still have to do multiple things.”

Among the most time-consuming of these is correspondence. Pirro feels compelled “to give every single one at least an opportunity to receive an answer”. Having submitted many proposals without reply in his earlier career, he believes making the effort can be an important motivation.

“It can be good for them and it has been good for some of them,” he says. “I spend a lot of time to answer people properly and evaluate those who can be potentially good for us.”

This involves talking to those close to the driver, from engineers to management, and then the parents and the individual in question to get a handle on their character.

“Being successful is not only delivering a good


laptime,” he says. “With all the tools available to a driver, the difference is very slim between the very good ones and the OK ones. But then the very good ones excel in other areas. Personality and the attitude can give you an idea of whether somebody can be a potential champion.”

The next step is negotiating, which involves a fine line of knowing “what to offer, how to offer”. It's a balance between offering enough to snare a hot prospect who could easily be snapped up by a rival academy scheme but not too much.



Ugo Ugochukwu was signed to the programme in 2021 after success in karts and in 2023 was second in Italian F4 and won the Euro F4 title

“I just want McLaren to spend money properly,” he says. “Rome wasn't built in a day, it takes time and the benefit of such a programme will be seen in some time. But I really hope we can be inspirational for young drivers.

“My dream is to help somebody who would not have made it without our support.” 

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PATRICIO O'WARD

Last year Patricio 'Pato' O'Ward scored seven podiums on his way to fourth place in the IndyCar championship, was named one of McLaren's Formula 1 reserve drivers, and took to the MCL60's cockpit in FP1 and the tyre test at Yas Marina. While the Mexican wants to give McLaren the prestigious Indy 500 win, he still dreams about F1...

This year you've had some Formula 1 outings again, both in FP1 and the Abu Dhabi tyre test. How difficult is it to adapt from IndyCar to Formula 1 machinery?

The physical limitation in F1 for sure is the neck. I did over a hundred laps during the tyre test and my neck was a champ after that! You have no idea how much work I've done on my neck the past two years. I've destroyed it day after day to withstand what these cars are capable of. In the quick corners it's unbelievable how much speed you can carry with an F1 car. You get onto the throttle in places where you think 'there is no way I can do it here' but the thing is just planted to the track and goes. It's awesome. It's such a big step in braking power, how the front of the car darts into the corners, and the acceleration. Everything is more just everywhere.

F1 is the pinnacle of motorsports, but what is more enjoyable to drive? If we look at the IndyCar onboards we can see you fighting the steering wheel a lot more.

In IndyCar the fight is much more. You can manhandle the thing around, but in Formula 1 your mind is blown by the speed of the car. Just how it can corner, how it can stop. If you go from an IndyCar into an F1 car the step is huge. The grip of the F1 car is insane.

As you're an IndyCar driver and know the US market well, how do you look at the growing popularity of F1 in the US?

It's huge and keeps getting bigger and bigger.

I think everybody calls it the Netflix effect, which is definitely why you see a lot of young people coming to races. A lot of influencers are starting to get into F1, it's going more and more mainstream. It's grown massively and I can only see it getting bigger. I think Netflix is what has sparked it and then word of mouth has done the rest of the job.

Recently we've seen F1 return to Las Vegas. Drivers like Max Verstappen say the US deserves three races, although the question is if street circuits in Miami and Vegas are the best places to go to. There are many great tracks already in the US – how do you view that?

I would love to see an F1 car at Watkins Glen. I think that would be mad. I would love to see an F1 car possibly at Road America as well. From the IndyCar tracks I think those are the only ones that are F1 capable. All the others are way too small or way too bumpy. But I think Watkins Glen would be crazy in a Formula 1 car. There won't be a lot of room for error, but that's part of it. Even in IndyCar we race at some pretty

narrow tracks. Sometimes it's too narrow in my opinion, but that is what it is.

Talking about IndyCar, how do you look back on your 2023 campaign?

2023 was a year with a lot of little wins, but the elephant in the room is that we didn't get a real win. I feel like Lando Norris's season in F1 and my season in IndyCar are so similar. We both have seven podiums and were second on many occasions. There were opportunities that were almost wins but one guy just did it better. I think we share the same frustrations, but it's a great platform to build on for 2024. We just want to clean everything up, not have any DNFs, and little details in the pitstops and strategies. Last season we were in championship contention up until a couple of races out. Alex Palou just didn't have a bad race, but that isn't always going to be the case. Maybe next year it's our turn.

Looking a bit further ahead, is moving to F1 one day still in the back of your mind?

Oh, absolutely! I want to be here in the future and I'm doing everything I can for my name to be the one that's called up whenever those doors open. Is it going to happen? I don't know. Could it happen? Absolutely. My Cinderella story would be to win the 500 and the IndyCar title and then to tackle the challenge of F1 with McLaren. I want to be the one that gives them the Indy 500 win and the championship so that would be my ideal scenario. You never know if that's going to happen, but I try everything I possibly can.

**IN THE QUICK CORNERS
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THE HIT FACTORY

There's a team which many senior figures in motor racing believe is good enough to join the Formula 1 grid... but it's not Andretti. Meet the organisation which has been shaping world champions for 40 years...

WORDS OLEG KARPOV PICTURES PREMA RACING



THERE ARE TROPHIES ALL over the place. Shelves, cupboards, windowsills and even tool racks are littered with gongs and commendations of various sizes and shapes. Prema people joke that soon they will be propping up doors with them. Not only is the current building unable to accommodate all the team's equipment and all its staff, but also the prizes.

"To be honest, I have a bit of a problem with

that, I still have to find the time to organise my own cabinet." Prema boss René Rosin welcomes GP Racing to his office at the team's base in Grisignano di Zocco in northern Italy, some 50 kilometres from Venice.

The shelves in Rosin's office cabinet are no different to those in the marketing department next door, where his wife Angelina works among others, or his father Angelo's office across the

hall. The ones in René's office, he says, are of no particular importance – they've ended up here as a result of numerous moves to accommodate the growing organisation in what you might call a historic building on Via Alcide de Gasperi. As we meet, the day before the team's 40th-anniversary celebrations, a small part of the collection of the most valuable trophies is being transported to the venue in Venice. There, more than 400 guests will



The hit factory where the magic happens (left). Some of Prema's many trophies were on display at the team's anniversary party (below, left)

we began to do various other projects and here we are, 150 people and two dozen cars."

Rosin starts counting. "Six in Formula 4, four in Formula Regional, three in F1 Academy, three in Formula 3 and two in Formula 2. Plus maybe another one in the Academy for the wildcard driver in a few rounds."

Prema's stream of success will certainly not stop in 2024. Formula 4 will feature four of the most talented young karters who are already being compared with the golden generation of Max Verstappen, George Russell, Lando Norris, Alex Albon and Charles Leclerc. Remember the names: Freddie Slater, Kean Nakamura Berta, Alex Powell and Tomas Stolcermanis will all start their journey in single-seaters with Prema. Oleksandr Bondarev, winner of the European Championship in OKJ and Williams protégé, who's just a couple of years younger, will continue with Prema in karting.

All are predicted to have a future in F1, where almost half of the current drivers have raced at some stage in their careers for Prema.



gather, including many former Prema drivers – the likes of IndyCar star Ryan Briscoe, F1 world champion Jacques Villeneuve and current Alpine driver Esteban Ocon.

"We still have a lot of them in boxes," René admits of the ever-expanding silverware inventory. The team founded by his father has now grown to 150 people. It's still considered a "family team". "But it's starting to become too big a family now," René laughs.

Last year, 19 drivers were responsible for sending trophies to Via Alcide de Gasperi on an almost industrial scale – and that's just counting the single-seaters. More recently, Prema has been involved in endurance racing as well as running a satellite team in Italian karting. But its roots lie in the junior single-seater scene.

STEP BACK IN TIME

Prema Racing has been the dominant force in Formula 4 for many years. Virtually all the great talent of recent years has come through the structure run by René, his father, and his wife. In the last 10 years Prema has won the national championship seven times and its drivers have won six individual titles. In the category above, the Formula Regional European Championship by Alpine, Prema has won four team titles in the last five years and the same number of individual titles for its drivers. Since joining FIA Formula 3 in 2019, the team has won all but one championship and, in the Formula 3 European Championship that preceded it, Prema was simply in a league of its own, winning seven



Part of Prema's continued expansion will see the team's simulator (above) moved into a building closer to the main factory

consecutive team titles between 2013 and 2018.

It is beyond René's ability to even begin to estimate the number of trophies the team has collected over the past 40 years.

"No, I just don't know," he says. "Honestly, nobody knows."

Pre.Ma Racing, which stands for 'PREparazione MACchine Racing', was founded in 1983 by Angelo Rosin and his associate Giorgio Piccolo.

"It was Giorgio doing the sporting side and my dad doing the engineering side," says René. "Then my cousin did the mechanics. And then a year later, when I was about two, my mum came in, and she did the accounts. From there it started to grow. First they had two cars in Formula 3, then three cars. At first, it was just in Italy and then they started going to the F3 race at the Monaco Grand Prix and the Macau Grand Prix. And then

HAPPENING ALL OVER AGAIN

In 2017, the team literally stormed into GP2 – never having competed at this level before, Prema crushed the opposition with Pierre Gasly and Antonio Giovinazzi. Both ended up in F1. Then in F2, which replaced GP2 in 2018, Charles Leclerc, Mick Schumacher and Oscar Piastri moved up a class after winning titles with Rosin's team.

"We put Guillaume Capietto in charge and, for me, he's one of the best engineers there is in the whole single-seater world, not just in F2," says Rosin. "Together we built a strong structure to make sure everything worked as well as possible. But we also had very good drivers, because Pierre and Antonio not only pushed each other but also worked together, and for me that was always important, that the drivers could work together."

"To be honest, I didn't expect us to win the championship. I was hoping for race wins but in the end we finished first and second. It was a great season. And then a year later, with Charles as well. I can't complain! We had some incredible talent in the team. And I don't want to forget all the drivers in F3, because we had Lance Stroll, Esteban Ocon... When I look at the Formula 1 grid now, I have to say I feel very privileged and very lucky to have worked with such talent."

Our conversation is interrupted by a phone call from none other than Toto Wolff. Dealing with F1 team bosses is part of Rosin's daily routine ▶



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and part of the brief chat is, of course, dedicated to 17-year-old Andrea Kimi Antonelli. Mercedes' hottest youngster has won two titles out of a possible two after moving up from karting, in Italian Formula 4 and FRECA, both with Prema. At the end of last year Mercedes shocked everyone – or rather, only those who know very little about Antonelli – with the news that he would be moving straight into F2 in 2024, bypassing F3. Almost needless to say, he'll be with Prema.

There is hardly a team in Formula 1 whose juniors aren't currently racing for Prema. As well as Mercedes, Rosin's mentees currently include members of the Ferrari, McLaren, Aston Martin, Alpine and Williams junior programmes, and in the recent past both of the team's F2 drivers were from Red Bull's roster. In an office just a few dozen metres from René's, the team's engineers work on reports even during the winter. After each race or test, 20-plus-page documents prepared by Prema are sent to the drivers, managers and bosses of the junior programmes.

"Honestly, I'm trying to give everyone my professionalism, our professionalism, our fairness," says Rosin of working with F1 teams, often managing drivers from different manufacturers at the same time. This year Antonelli's F2 team-mate will be another hot young talent, Oliver Bearman, a member of the Ferrari Driver Academy.

"Our way of working is to provide the best service possible to each and every one of them," says Rosin. "And if that is the priority, we can work with anyone. We send out these reports, always trying to be as objective as possible. They go to the manufacturers, if we're dealing with drivers from them, to the management and also to the drivers themselves. Because the report is the first thing the driver has to go through after every race. There will always be positives and negatives, and you can learn from both."



Rosin poses with one of his former charges, F1 race winner Esteban Ocon, at the 40th anniversary party just before Christmas



RESPECTABLE

A new challenge lies ahead for Prema. Together with Iron Lynx, the Rosin team will effectively run Lamborghini's factory programme in the World Endurance Championship. The LMDh prototypes will be serviced by Prema engineers and mechanics – a new level for the once small family team.

"We have a ladder for drivers," says René, "from karting to Formula 4, to Regional and up to F2. But we also have a ladder for engineers. For example, we have some guys who start with their internship, do data, do something small, and then move on to Formula 4. And they all see that we can provide opportunities to grow, not just for drivers. They can go to F3, F2.

"That's also important for us because for mechanics and engineers who work in motorsport, the dream is F1, as it is for drivers. And sometimes they leave. But now we can offer something really big, the World Endurance

Championship, the pinnacle of motorsport in terms of technology, hybrid cars, Le Mans."

On Rosin's desk, right on top of the latest issue of *GP Racing*, is an interesting business card bearing the logo of another major racing series.

"We will have, I think, something quite big coming up," he smiles, tucking it away in the desk. "But let's wait, I don't want to say anything until it's finalised, but we'll potentially have something big in 2025.

"My father is always against further growth because, to be honest, it's already quite a challenge to manage everything. But again, if we're going to do something else in the future, we're not going to do it just to be there. If we decide to do something, it's because we want to be competitive, to fight for wins."

The LMDh programme is forcing Prema to expand further. It has bought another building in the area and is fitting another workshop. This will house the team's simulator, which is

"WE CAN DREAM ABOUT PREMA IN F1 BUT YOU NEED A LOT OF FACTORS TO COME TOGETHER. AT THE MOMENT, I DON'T SEE THAT HAPPENING IN THE NEXT FEW YEARS"



currently a little further away.

"And we'll also have a room for all of the trophies," adds René.

And what about F1?

"Sure, we can dream about Prema in F1," he says. "But you need a lot of factors to come together. At the moment, I don't see that happening in the next few years, for sure, with the way the Concorde Agreement is now. But if some things change, if there's a chance and a possibility for a new entry, we'll be there to look at it." 

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PICTURES OF THE YEAR

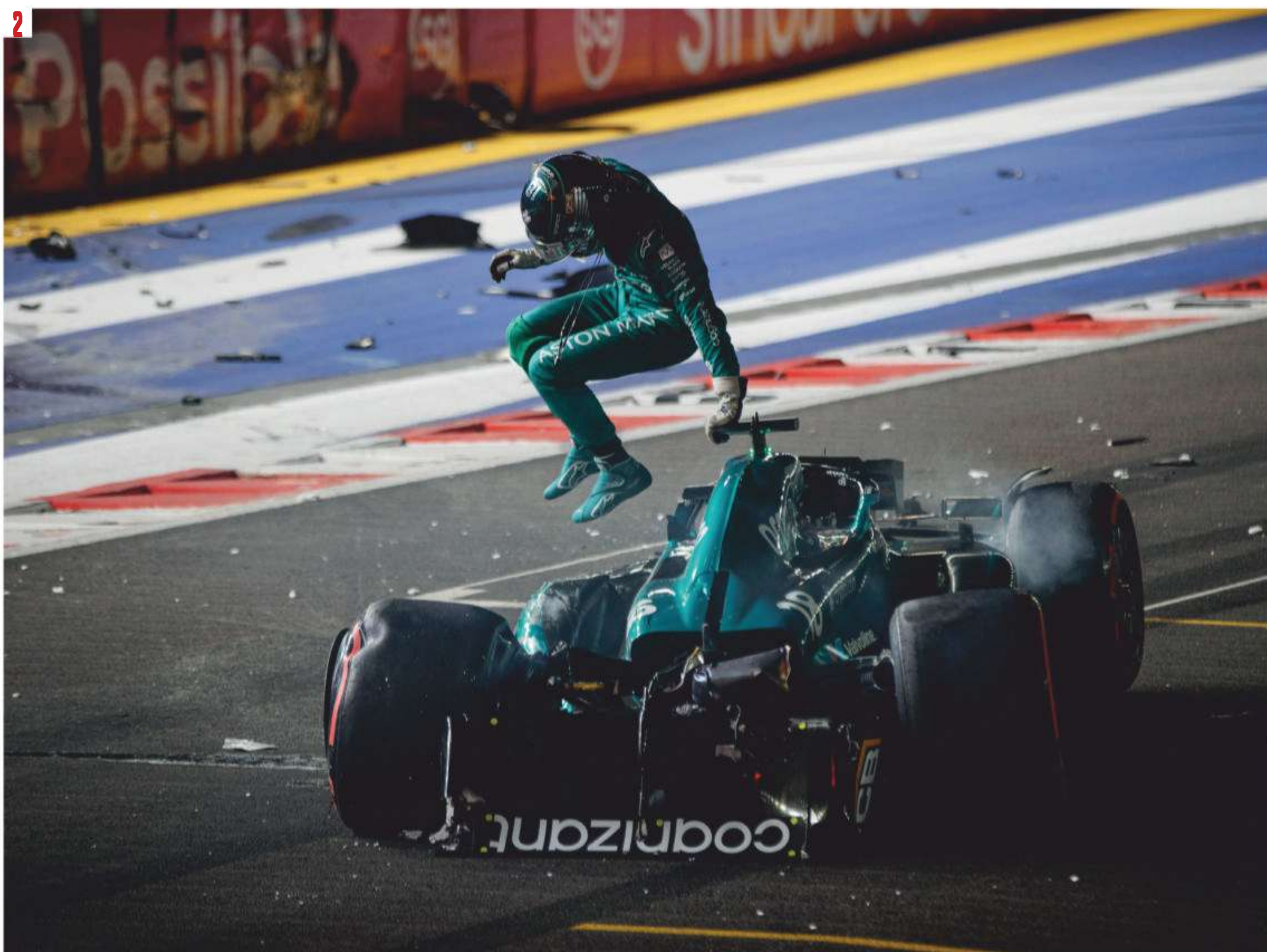
A stunning gallery of the best of F1 2023 from Motorsport Images and its platinum roster of photographers



REIGNING IN THE RAIN

Everything seemed to go right for Max Verstappen in 2023. When a risky call was made, such as pitting for full wets at Zandvoort two laps after coming in for inters, fate intervened by virtue of a red flag and Max went on to win his home race for the third time







1 AERIAL SPLENDOUR

The Marina Bay Circuit pit straight and opening corners, taken from the Singapore Flyer ferris wheel. Singapore was, of course, the only race Red Bull didn't win in 2023. Carlos Sainz and Ferrari took the honours

2 LEAPING CLEAR

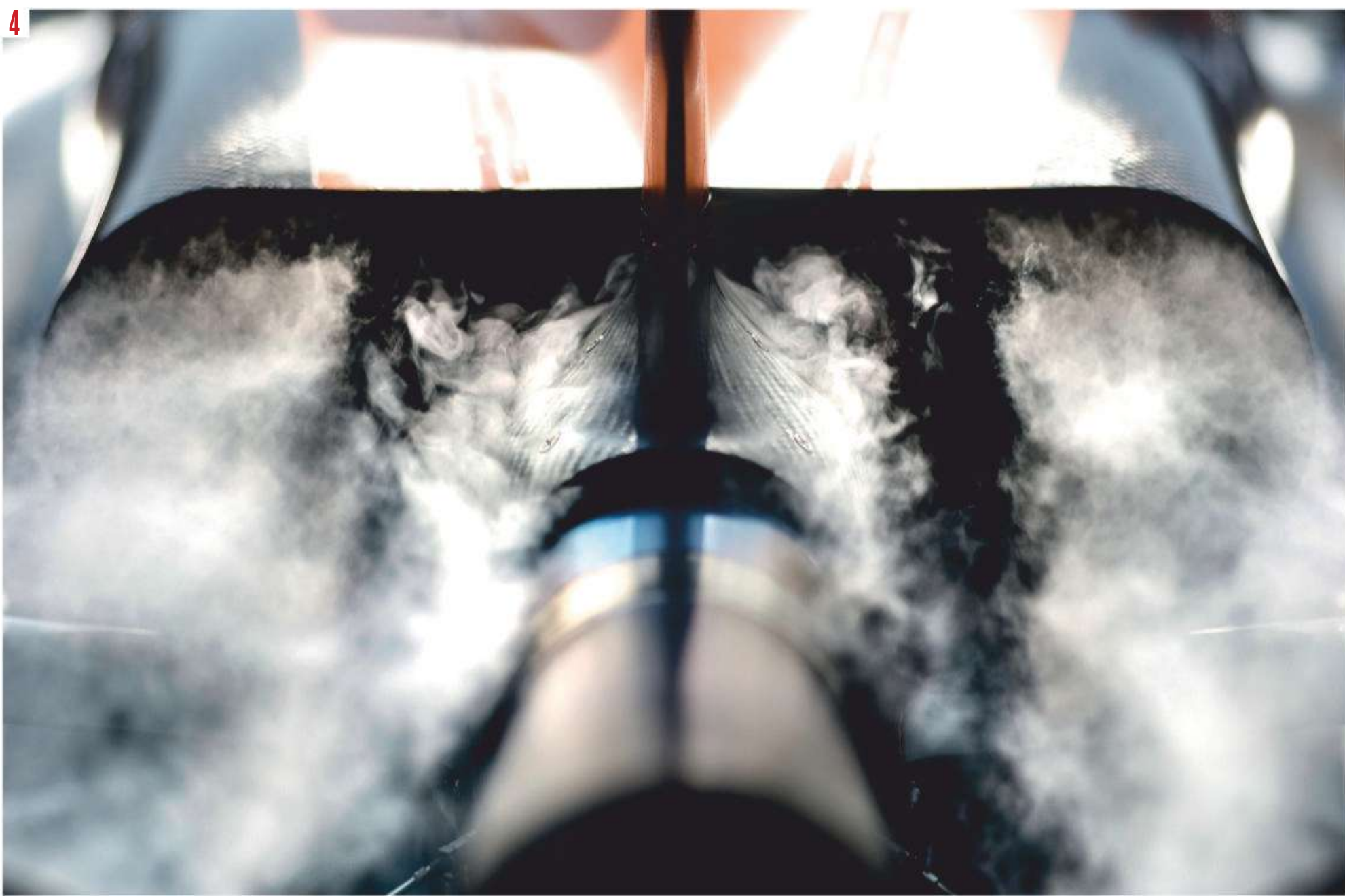
Lance Stroll was pushing hard in the dying moments of Q1 in Singapore when he lost control of his Aston Martin at the final corner. Passed fit but still suffering from the side-effects of the shunt, he chose not to race

3 TRICKY TIMES

Lando Norris battles with the conditions in the final third of the Monaco GP. Rain caused mayhem and Norris, his McLaren MCL60 sporting a special one-off 'Triple Crown' livery, could only finish a lowly ninth

4 STEAMY SUNDAY

Dry ice, used to cool cars when they're sitting on the grid, rises from the rear of Lando Norris's McLaren ahead of the Australian GP. A chaotic race would see cars undertake three more standing starts following red flags





1

1 DISAPPOINTMENT IN SAUDI

Hopes of a Red Bull vs Ferrari battle for honours all but died in Saudi Arabia. As Red Bull claimed its second one-two in two races, Carlos Sainz was only sixth, just ahead of team-mate Charles Leclerc

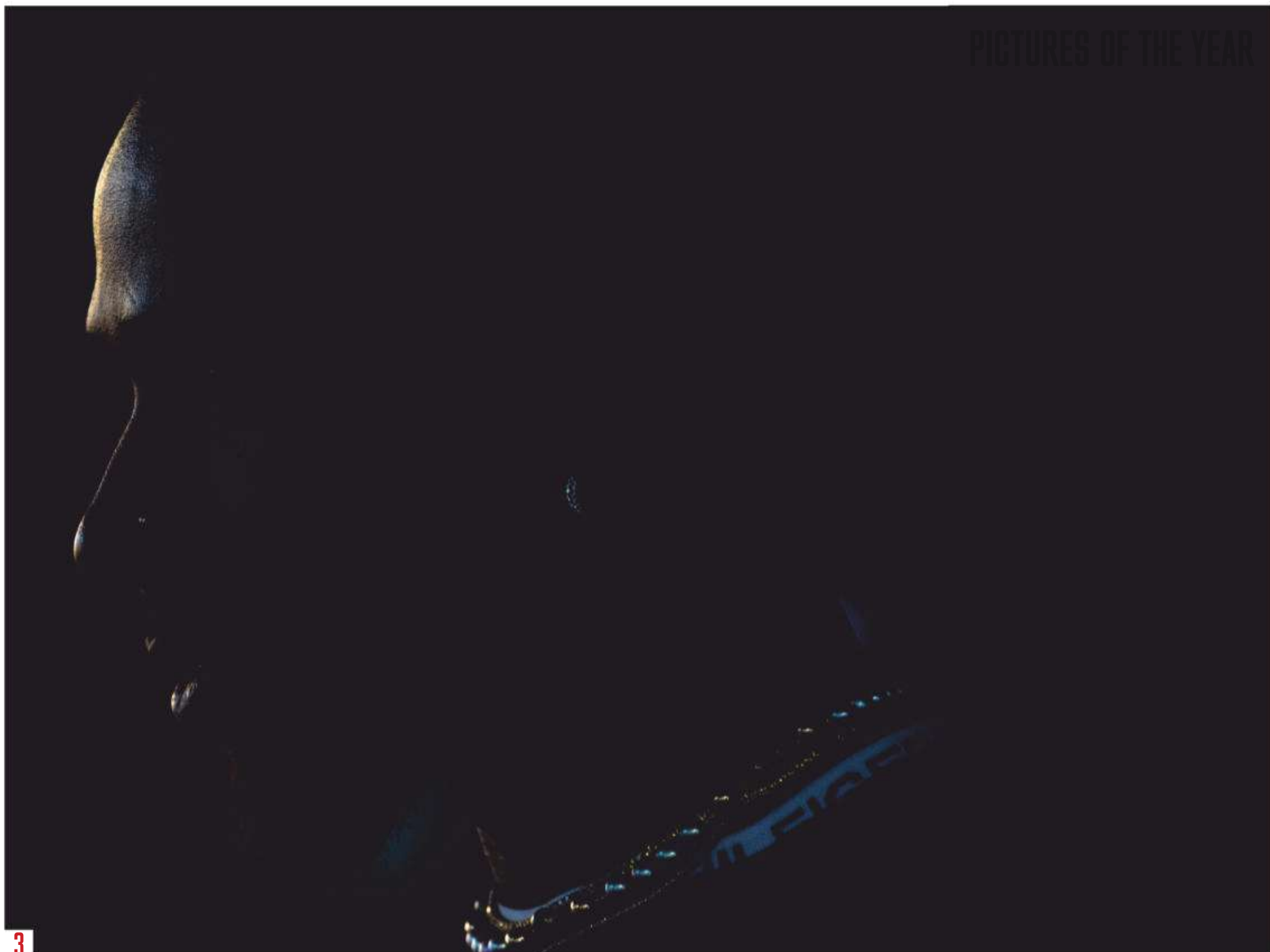
2 SLIDE RULES

At the end of a long season Fernando Alonso could still act like a kid in a sweet shop, 22 years after his F1 debut. Why walk down the stairs in Aston Martin's Abu Dhabi HQ when you can show off to the camera?

2



2



3

3 COMING OUT OF THE DARK?

Lewis Hamilton endured his second consecutive winless season in 2023, but felt there was enough light at the end of Mercedes' tunnel to commit to another two years racing for the Silver Arrows

4 HEARTBREAK AT HOME

Sergio Pérez's season had gone south well before the Mexican GP. However, a first win on home soil would have been a huge boost for him going into 2024. Hopes of victory died at the first corner...



4



1

1 BLUE IS THE COLOUR

Unless it isn't. If you look closely you'll see that this is actually a green Aston Martin, bathed in the glow of the BIC Tower during the Bahrain GP. Lights and video displays were added to the iconic tower in 2021



2

2 TIME TO SMILE

Lando Norris obviously knew something that we didn't at the Canadian GP. McLaren had tanked the early races but upgrades in Spain, and those to come a race later in Austria, transformed the team's year



3

3 PUTTING IT ALL ON RED

This was when F1's Las Vegas gamble could have turned sour. Carlos Sainz's early FP1 interaction with a drain cover didn't get proceedings off to a good start, but the weekend recovered well from there

PICTURES OF THE YEAR



4

4 STILL GUNNING FOR SUCCESS

Despite confirming his third consecutive world title in Qatar two races earlier, Max Verstappen's joy at winning the Mexican GP, his 16th victory from 19 races – not counting sprints – was plain for all to see

5 NOT QUITE VIVA LAS VEGAS

Lewis Hamilton was, from day one, an avid proponent of a race in Las Vegas and must have been hopeful of securing a good result at a new track. Sadly, seventh was the best he could manage



5

6 SPARKING FOR SECOND

George Russell takes Max Verstappen for second in Singapore. A Mercedes gamble to change tyres during a Safety Car period backfired though and he eventually crashed out of third on the final lap



6

PICTURES OF THE YEAR





2 START AS YOU MEAN TO GO ON

Fernando Alonso's switch from Alpine to Aston Martin for 2023 seemed strange given the relative positions of the teams in 2022. But the move paid off handsomely, starting with a podium in Bahrain

2 MIAMI MASTERCLASS

After starting the GP from ninth Max Verstappen dealt team-mate, and polewinner, Sergio Pérez a hammer blow in the early title race. He won, after passing the Mexican with ease with nine laps to go

3 WHEN THE BICKERING STOPS

Anyone watching F1 in 2023 will have heard the odd tetchy radio discussion between engineer Gianpiero Lambiase and Max Verstappen, something Max said he needed to be at his best. And then they made up

4 BORING IN BAKU

The old part of the Baku street circuit saw extra action in 2023 with the addition of a sprint event, but that, and the GP, were some of the most processional races of the year after tweaks to one of the DRS zones



PICTURES OF THE YEAR

1 NO MERC MAGIC BULLET

In 2022 Mercedes had, by its own standards, a poor year. Any hopes that would be a mere blip for the multiple title winner was put to bed in Bahrain. Yes, Lewis Hamilton finished fifth but he was over 50 seconds behind the dominant Max Verstappen

2 SPRAY IT AGAIN, AND AGAIN, AND AGAIN...

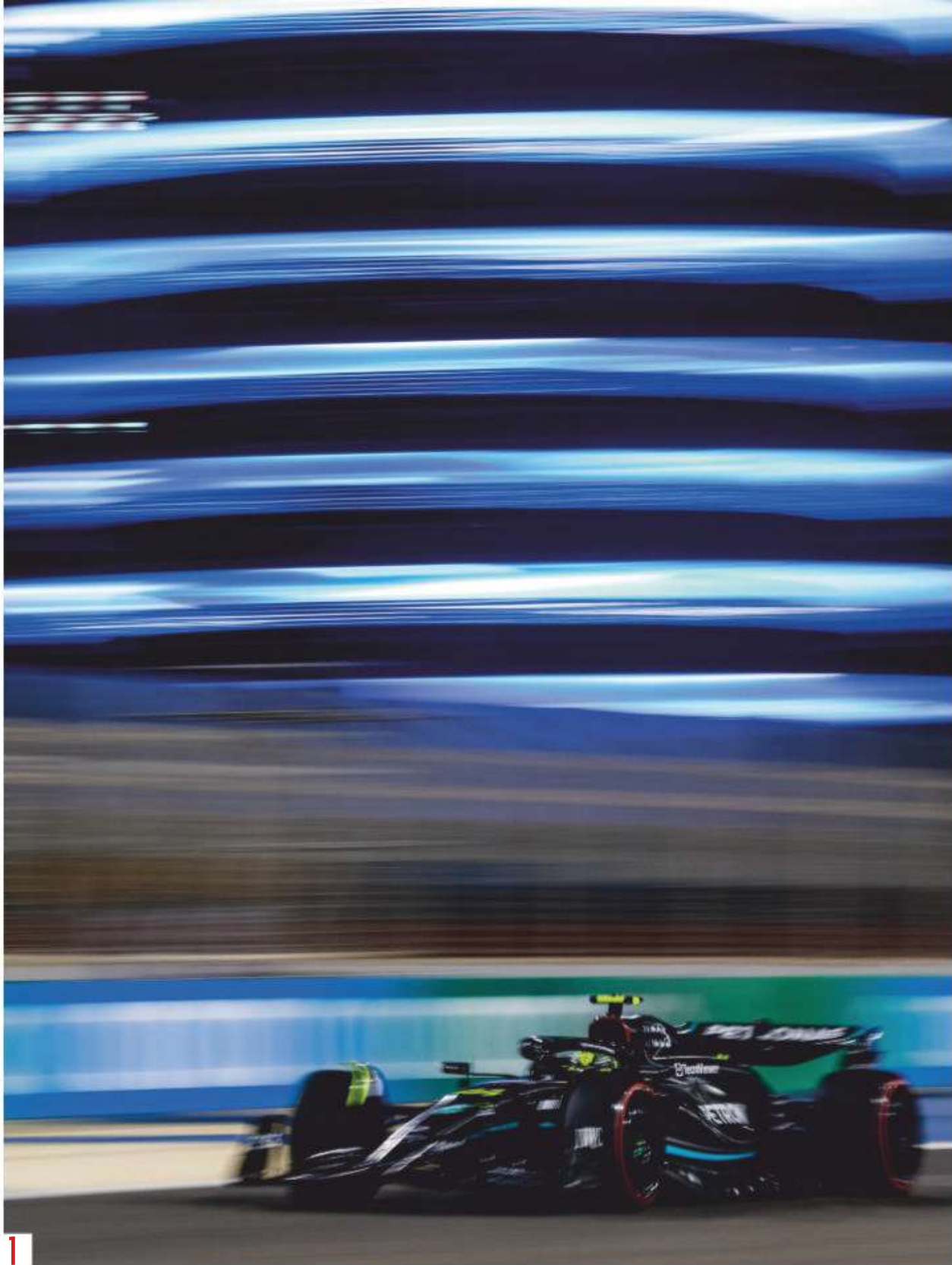
Max Verstappen, Sergio Pérez and chief engineer Paul Monaghan celebrate another Max triumph and the 12th consecutive win for the team, thus breaking McLaren's record for successive victories from 1988. The winner's trophy was, at this stage, still intact

3 STROLL PICKS UP THE PACE

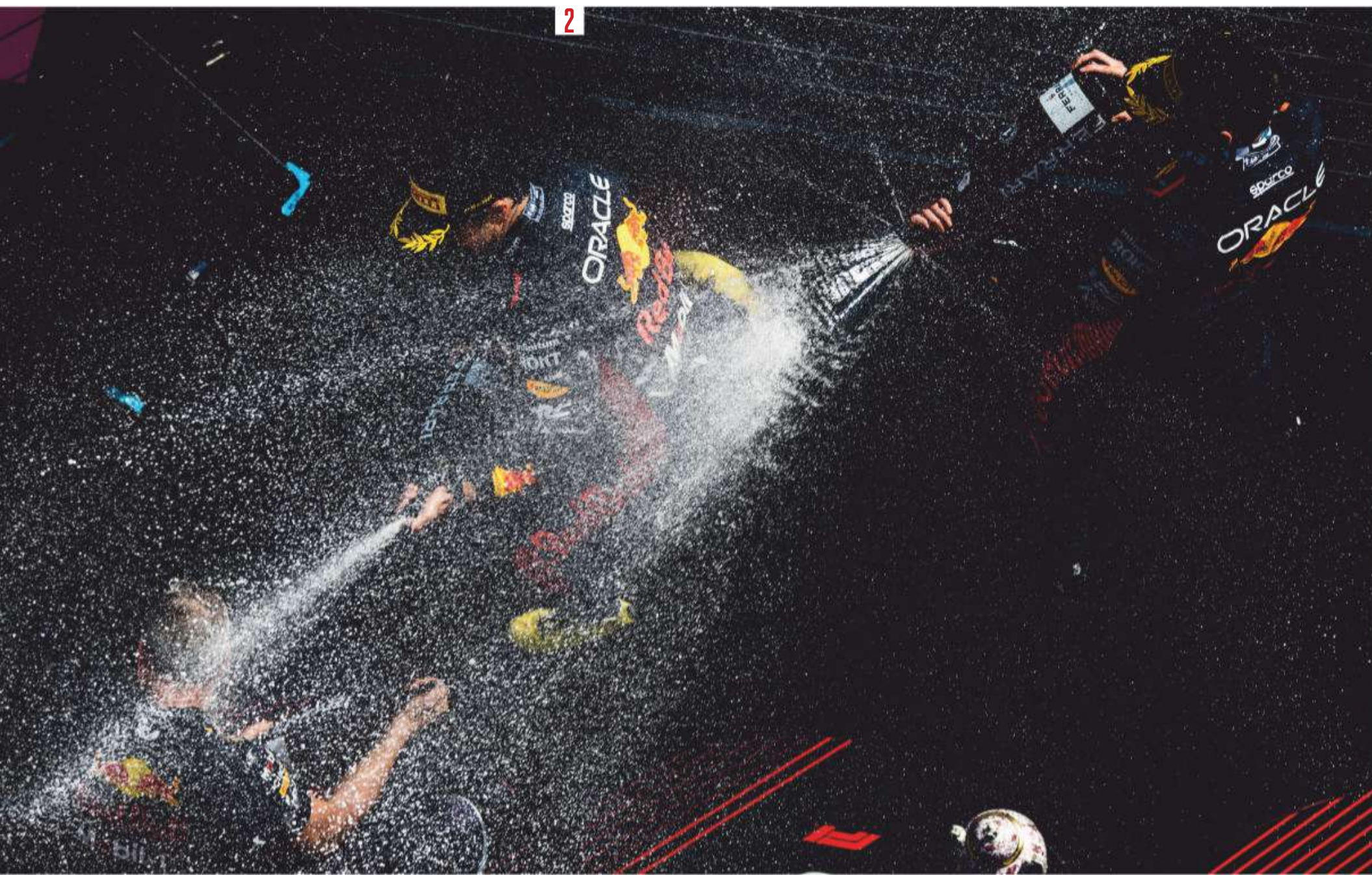
After a disappointing middle part of 2023 when Aston Martin struggled to kick on and he was having his own problems in the car, Lance Stroll ended the year well. Fifth in both Brazil and Las Vegas, he closed out the season with 10th in Abu Dhabi

4 THE SPA SPRINT SHUFFLE

For the first time since they were introduced in 2021, Spa hosted a sprint race. Naturally, the fickle Ardennes weather played a part and George Russell was one of the drivers who stopped too late for intermediates, dropping him to eighth at the flag



1



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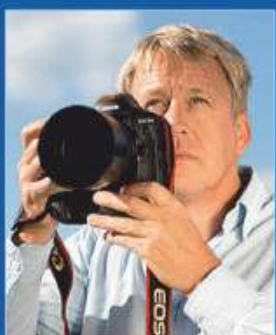


4

THIS IS...



MOTORSPORT IMAGES



STEVEN TEE

It's now 40 years since GP Racing's principal photographer first started taking pictures of F1 cars for a living. The MD of Motorsport Images subsidiary LAT, his work for McLaren means he can often be spotted around the team's garage



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GLENN DUNBAR

Glenn went freelance at the start of 2020, having been full-time at LAT for 18 years. He is still a major contributor to Motorsport Images, and covers F1 and Formula E when family commitments allow



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SAM BLOXHAM

Based in Edinburgh, Sam joined LAT back in 2013 and has since risen through the ranks to become a senior photographer at Motorsport Images. He has been covering Formula 1 for the company since the start of the 2021 season



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ANDY HONE

A freelance photographer for 16 years, Andy covers both Formula 1 and, where possible, Formula E for Motorsport Images. He also gets to spend a lot of time with the Haas F1 team as he is its official photographer



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ZAK MAUGER

Zak is now an integral part of the Motorsport Images team, and last season took over the role of main photographer for one of LAT's major commercial clients, the Silverstone-based Aston Martin Formula 1 team



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SIMON GALLOWAY

Simon has been on the freelance beat since 2016, having previously worked at Haymarket, PA, FOM and Bristol News. He was busy covering both Formula E and F1 in 2023 and is moving to a full-time role at Motorsport Images in 2024



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JAKE GRANT

Jake graduated with a photography degree from Falmouth in 2022 and last year divided his time between working on the picture desk for Motorsport Images and shooting several F1 races for the first time, including Miami and Monza



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Motor racing's biggest and best image resource boasts a century of racing and motoring experience

1. SINGAPORE LIGHT

An unusual view of the Marina Bay circuit in daylight during FP1, with eventual Singapore GP winner Carlos Sainz blasting by in his Ferrari. Sainz's victory prevented Red Bull from taking a clean sweep of wins in 2023



PICTURES OF THE YEAR



1



2

2. HAPPY FANS

Ferrari didn't win the Italian GP at Monza, but third and fourth for Carlos Sainz and Charles Leclerc, behind a Red Bull one-two, was enough excuse for the tifosi to pour onto the track at the end of the race and start celebrating



PAT FRY

The former Benetton, McLaren, Ferrari and Alpine engineer made an eye-opening move to Williams as chief technical officer last autumn. Returning this championship-winning team to the front of the grid won't be the work of a moment, though...

Obviously it's early days for you at Williams, but what have you made of it so far? What needs to be done?

There's clearly a reasonable amount of work to do. There's always things that work and things that don't. There are some bits that are ahead of where I've just come from and some others where we're behind and we need to work at. I'm still putting that picture together.

What is James Vowles bringing as a relatively youthful team principal?

The way I see this place developing is very much aligned with James's view of what we need to be doing. There are four things that make a team. It's the people, the tools, the methodologies – but most importantly it's the team spirit, how we go about doing that. Creating that culture – you've got to take risks, you've got to be brave, but you've also got to be working together because everyone makes mistakes when you're pushing as hard as you need to be. It's about supporting each other because if you're not making mistakes you're not trying hard enough. And it's about creating an environment where people feel empowered to make brave decisions.

James has talked about needing five years or so to bring the team forwards because of how far behind it is in some respects because of two decades of underinvestment. Have you seen that as well?

Well, it's a fair assessment. There's clearly a lot for us to do, all the way through the company. But all these things are fixable – there's nothing that's going to be holding us back but, equally,

it's not the work of two minutes to fix it. It's going to be a three, four, five-year plan to get back to where we want to be. But you need to have that overall vision of where you want to get to and drive towards it – and everyone needs to buy into it, from the mechanic in the garage, the people on sub-assembly and in the machine shop, all the way to the top.

The market for tech people is quite competitive. Do you feel that, despite recent history, it's an attractive place to work?

I hope so. I think it's a team that's moving forwards. There's no point in hiding the fact that we've got a mountain of work to do and things to develop. But I think people will see that there's a commitment there – and as I said, that commitment has to start from the very top.

James often says that one of the big changes this team needs to make is to go from a mindset of just surviving until the next race weekend to one where it's looking two or three years into the future. How do you actually go about expanding that perspective?

Typically – and it's not just here, it was like that

when I went back to Renault/Alpine – in a team that's been underfunded, you end up with people sorting their own little world out. And naturally, over time, you get – 'silos' is the wrong word but there are individual systems in each place and you're building on a company without an overall vision. So the first thing is, what is that overall vision? If it's, say, to win the world championship in five years' time, then below that we need to put the tools in place, develop the people, develop a mindset. It's easy to map out, hard to do! I don't know if that's answered your question or not...

In terms of people management, for instance, is it a case of having meetings where you're saying, "OK, let's not talk about next week, let's brainstorm ideas for a year or two in the future"? Well, the first question I've been asking is "What tools and technology do we need in five years' time?" You've got to think that far ahead because a lot of this stuff takes that long to put in place. So I've been having those conversations with the various managers of departments – it's good to get their idea of where we are and where we need to get to, and then pull everything together. It's going to be a collective decision about where we have to get to and what we actually need.

Is that place you want to get to realistically the number-one spot?

I suppose, having worked with Ron [Dennis], who famously said "Second place is first of the losers", and having worked for five years at Ferrari, where you celebrate winning but nothing else, I'm kind of tainted in that way. We need to build this place back to being a winning team.

IT'S ABOUT SUPPORTING EACH OTHER BECAUSE IF YOU'RE NOT MAKING MISTAKES YOU'RE NOT TRYING HARD ENOUGH

THE LONG INTERVIEW

He was the first Brazilian to scale the pinnacle of Formula 1, kicking open a door for the likes of Nelson Piquet and Ayrton Senna. While it's now half a century since he moved to McLaren and claimed his second F1 world championship, that was just another waypoint for a driver who would also win the Indianapolis 500 twice...

WORDS CHARLES BRADLEY
PORTRAITS ERIC GILBERT

THIS IS

EMERSON FITTIPALDI





EMERSON FITTIPALDI

The trailblazer for Brazilians who dreamed of racing in Formula 1, Emerson Fittipaldi dared not only to reach the top of the sport but conquered the world on two occasions with Lotus and McLaren. He paved the way for Nelson Piquet and Ayrton Senna to emulate his success as multiple title-winning countrymen amidst a wave of Brazilian racing stars.

Aged 25 in 1972, Fittipaldi held the mantle of the youngest F1 world champion for 33 years, moving his great friend and rival Jackie Stewart to state: “Emerson arrived in F1 like a rocketship.”

He claimed 14 grand prix victories and 35 podiums over his decade in F1. Fittipaldi then took on the challenge of IndyCar racing in America, twice capturing its greatest race – the Indianapolis 500 – and winning another title.

These days he’s supporting the career of his 16-year-old son Emerson Jr (aka: ‘Little Emmo’) who is climbing the junior single-seater ladder in Europe. *GP Racing* catches up with ‘Big Emmo’ in Miami, the day after celebrating his 77th birthday...

GP Racing: Emerson, as the original Brazilian F1 world champion, coming to Europe to set the path followed by Piquet and Senna, how do you feel about creating this trend?

Emerson Fittipaldi: I feel very, very proud to have been the first one. After me, and before Nelson and Ayrton, was my brother Wilson and Carlos Pace. I called us ‘The Three Musketeers!’ Then there was an amazing number of Brazilian drivers across 50 years, that was fantastic. Until now, when we’re missing them from F1.

GP Racing found Emmo as engaging as ever when we visited him in Miami the day after his 77th birthday

GPR: You started racing 50cc bikes, even hydroplane boats, before you started karting...

EF: You could only go karting in Brazil from 17. I started racing bikes at 14. I was loaned an Italian bike, a four-stroke 50cc, by Adu Celso, who was the first Brazilian to race in the 500cc World Championship. He was a very good friend of mine from childhood.

GPR: And you were Wilson’s kart mechanic?

EF: And Carlos Pace’s also! I kept them immaculate. So that meant when I was old enough, because he was Wilson’s age, Carlos lent me his own kart for a rookie race. We were total enthusiasts.

GPR: You came to Britain to seek success and your fortune in racing in February 1969, how did that feel when you arrived at a cold, foggy Gatwick Airport?

EF: I’d only ever been outside Brazil to visit Uruguay once, and when I saw between the clouds some green fields, I said to myself, “This is the land of Graham Hill, Jim Clark and Jackie Stewart” – it was a dream to come to England to race.

There was an Anglo-Brazilian called Gerry Cunningham, who was the fibreglass supplier for the cars built by me and Wilson. He had raced at Snetterton with Jim Russell in Formula Ford.

He was waiting for me in his Mini Cooper to drive me to a guest house in Wimbledon, owned by a Mr and Mrs Bates, where I would stay. The old lady was so good to me, treated me like a son, and she’d always offer me tea and biscuits as she knew I was feeling very cold as a Brazilian in England in February!

GPR: You’d only been in Britain for a few months, yet you were winning F3 races. Is it true that both Colin Chapman and Frank Williams offered you F1 drives almost straight away?

EF: Yes. I first met Frank Williams very early on, with Gerry. I took my pictures from Brazil and Frank had no clue there was a racing scene there.

After I won the F3 championship, Frank called me and he flew to Norwich for lunch, where he asked me to drive as team-mate to Piers Courage in F1. Then Colin called me around the same time!

I said to both: “I’m not ready for Formula 1, I need at least half a season in F2.”

I was scared to tell Colin, but he was very nice about it and said, “OK, after six months of F2 it will be the British GP and you can race F1 there.”

GPR: True to his word, you made your F1 debut at Silverstone with Lotus. How did it feel to have Graham Hill and Jochen Rindt as team-mates?





EF: My dream since I was a young boy was to start a grand prix. There was a very special day at Silverstone, when Jochen was leading the championship, and we had a test. Colin asked Jochen to do some laps in the 49, just to see that the car was good to drive. Then I went out and I felt the car was understeering, so I came in and while Colin crouched down next to my cockpit, Jochen was also listening.

I suggested adding front wing, but Jochen said, “No, just put more power down mid-corner, break away the back end of the car, just drive it harder.” And he was 100% correct. I immediately went faster.

GPR: When Jochen was killed in qualifying at Monza, it must have been such a terrible time for everyone...

EF: It was the first time I felt the reality of Formula 1. The bad side. The risk we had. To me, to my family, it was a big shock. It was a very tough time. But you had to survive back then. You just had to switch off and think “It won’t happen to me.”

GPR: Is it true Rindt wanted you to drive in the Formula 2 team he was forming with Bernie Ecclestone for 1971?

Fittipaldi made his F1 debut, with Lotus, at the 1970 British GP (above) where he finished eighth. In only his fourth GP, at Watkins Glen (top), he claimed his maiden victory



EF: Yes, we’d had breakfast that morning and discussed it, for Roy Winkelmann’s team and Bernie. Jochen said, “Can you replace me next year?” and we shook hands on it. No need for talk about contracts or money, I said, “Sure Jochen, I’d be happy to do it.” I always wanted to continue with F2 because I needed more running.

GPR: After Lotus skipped Canada, the next race was Watkins Glen – and you took your first grand prix victory in only your fourth F1 start...

EF: I waited a week after Monza, but there was no call from Colin. I assumed he was going to get an experienced driver to replace Jochen, because John Miles was so upset that he left the team.

Then Colin called me and said, “Emerson, you be the number one driver from now on.” I said, “But I have no experience,” and he replied, “You’re going to have full support from the team, don’t worry.”

He had a lot of confidence in me but, my God, I felt tremendous pressure going into Watkins Glen with only three grands prix experience. It was very cold there at that time of the year, and after qualifying I had a very high temperature. Colin, who was always extremely good to me, called a doctor, who came to my room at the Glen Motor Inn and he gave me an injection.

Then I woke up on race day and I still had the temperature! Colin was very worried but, as soon as I sat in the car for the warm-up, I felt good after a few laps.

GPR: How did your victory impact everyone at the team?

EF: Coming from a tragedy like Monza, everybody in the team was feeling Jochen’s death, but this just seemed to lift everyone’s confidence about the next year. I certainly knew I could do well.

GPR: Together, you and Colin then developed the Lotus 72 into a world beater...

EF: The car was fantastic, consistent and Colin was a genius. He had intuition about how to set up a car. We’d often go to dinner and he’d ask, “Emerson, how is the car?” We’d go corner by corner and, typical Colin, he’d do this [Emmo puts two fingers to his temple] and you could see he was thinking.

You’d go back the next day, and the car was always much faster. He was so advanced in everything, he was ahead of his time. He was my mentor for Formula 1. ▶

**I FELT TREMENDOUS PRESSURE
GOING INTO WATKINS GLEN WITH ONLY
THREE GRANDS PRIX EXPERIENCE**



EMERSON FITTIPALDI

GPR: Monza 1972 was when your world championship dream was realised, but it was quite a stressful time before the race when the transporter crashed on the drive to Italy.

EF: Peter Warr [team manager] called me at the hotel. "Emerson, you speak a little Italian, can you come to the Autostrada? We have a problem." The driver of the transporter fell asleep and the truck crashed and I saw my Lotus 72 in the grass with its parts just everywhere.

Then before the race, Eddie Dennis, the chief mechanic, came to my motorhome and said, "We have a big problem, the fuel tank is leaking and we don't know if we have enough time to pump it out and put in a new one."

The mechanics were amazing at Lotus but think how I felt about this – after what had happened with the transporter crash! But everything went in my favour in the race and I was world champion, thank God.

I WAS VERY UPSET WITH COLIN AFTERWARDS, AND I DECIDED NOT TO CONTINUE. I STAYED GOOD FRIENDS WITH HIM AND HAD HUGE RESPECT ALWAYS





GPR: You only suffered a handful of crashes in F1, but Zandvoort in 1973 was a bad one...

EF: It was horrible, I was stuck in the car and I couldn't get out. The front wheel broke, I turned and hit the wall. My feet were stuck between the pedals and I had a fuel leak. I could hear the fuel pump was still going – click, click, click – and I couldn't turn it off. The marshals in Holland were amateurs – I was sitting in fuel but they moved away, even though I was begging them to get me out of the car. They disappeared.

Then Graham Hill stopped to help one lap later. And Jo Ramirez, who was in the Tyrrell pit, saw I was still stuck in the car, so he ran over with a toolbox. It was Jo and Graham who cut the front of the car. The fuel pump was still on! They took a huge risk if there was a spark... I was so grateful to them. They risked their lives to save mine.

GPR: After winning a world championship and nine grands prix, why did you feel let down by Chapman so much that you walked out at the end of 1973?

EF: We agreed before Monza that if Ronnie [Peterson] is leading and I'm second, we'd exchange places. I still had a small chance that I could win the title again. With 15 laps to go, with third place far behind us, when we'd planned to put out the board to exchange, we got no signal. So, I had to attack Ronnie, I got right on his gearbox, but I couldn't overtake him.

I was very upset with Colin afterwards, and I decided not to continue. I stayed good friends with him and had huge respect always.

GPR: What was the catalyst for your McLaren move for 1974? Why not Tyrrell or Brabham?

EF: I lived in Switzerland and was always flying with the Philip Morris people, their HQ was in Lausanne. Patrick Duffeler was the PR and marketing guy, and he asked, "Emerson, would you like to drive for Marlboro?" They had BRM then, which wasn't doing well, but he said, "You choose the team."

I travelled to England and first I went to see Bernie at Brabham, because Gordon Murray was a fantastic designer. Then I went to see Ken Tyrrell, because Jackie had just retired, and it was another very good option. Then I went to McLaren, I knew Teddy Meyer. There was also Alastair Caldwell and Phil Kerr, who were from Bruce's time.

I felt so good with McLaren. Young people, very hard working and ambitious. And so it happened. I liked the M23, Gordon Coppuck was a very good designer.

GPR: Which was better, the Lotus 72 or McLaren M23?

EF: The Lotus 72. But McLaren had the better organisation. The M23 was very fast and stable in fast corners but sometimes we had problems on very bumpy tracks with the frequency of the suspension, the damping and spring combinations. But it was a solid car. ▶

The wreckage of Fittipaldi's Lotus after Graham Hill and Jo Ramirez had cut him from the car, following a practice shunt for the 1973 Dutch GP



Of his title-winning cars Emmo favours the Lotus 72E over the McLaren M23, but admits McLaren was the better team



EMERSON FITTIPALDI

IT WASN'T A
QUESTION OF MONEY.
IT WAS DIFFICULT TO
SAY NO TO FERRARI
BECAUSE I ALWAYS
HAD THAT DREAM

GPR: The 1974 title decider was between you and Ferrari's Clay Regazzoni, how difficult was he to race against that day at Watkins Glen in a winner-takes-all scenario?

EF: I never felt so much pressure before a race [he winces at the memory] – even compared to Monza '72 or the Indy 500s. I knew it was between me and Clay, equal on points going into the last race. Honestly, I only slept for three hours – the only time in my life when I couldn't sleep properly before a race.

The car wasn't running well, we had a problem damping the car and it was a bumpy track. But Clay had similar issues with his Ferrari, and we started side by side. Our mechanics couldn't look at the Ferrari mechanics; they couldn't look to us. Tremendous pressure in the air on the starting grid.

Teddy and Alastair were very good on strategy. We knew the Ferrari was very quick on the straight, so on full tanks in the morning warm-up we practiced with a very low rear wing. We thought if I can pass Clay on the first lap, the car on full tanks and minimal wing would pull away. But I had to pass him first!

GPR: Regazzoni had the reputation of being the hardest driver out there...



Fittipaldi with 16-year-old Emerson Jr. at a demo event in Miami. Dad is a big supporter of his son's burgeoning racing career

EF: Clay was always squeezing people, doing stupid things. He was ahead of me into Turn 1, we went up the hill and I was on his gearbox because we had minimum drag, so my McLaren was fast. On the long straight I saw Clay's head looking from side to side in his mirrors.

I slipstreamed him and he was in the middle of the track. I went to his right side and he immediately pushed me against the grass and, just before the edge of the track, I turned my car against him. I decided we were both going to crash unless he gave way. My wheel was nearly hitting him, my front wheel against his cockpit, and he got scared because I didn't back off and he moved away. I surprised him.

After the race, I was going to talk to Clay, because he was crazy. A good friend but exactly the opposite from Jackie, Niki and Carlos – everyone drove hard but we knew we could kill the other guy by having a crash. But I decided I was happy to win the championship, so I never talked to him about it.

GPR: Did you ever come close to driving for Ferrari?

EF: Twice. It nearly happened. First time, I met Enzo for lunch in 1971 and when I said I would re-sign for another year with Colin, he said, "You come to Ferrari for sure, any driver has the dream to drive for Ferrari." And I did want to drive for Ferrari. But he said, "You have to drive the sportscar, as well as Formula 1." And I wanted to focus on F1.

I refused because he wanted me to drive both. Then he said, "I'll pay you double what Colin Chapman pays." But it wasn't a question of money. It was difficult to say no to Ferrari because I always had that dream.

The second time was when Niki had the crash in 1976. ▶

Emmo went into the final race of 1974 level on points with Clay Regazzoni. He quickly pulled clear of the number 11 Ferrari, and fourth clinched his second world title





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I was in the hospital, my personal doctor was helping in Niki's room. Niki was on the edge of dying, they were keeping him alive with blood transfusions.

I knew it was 50/50 that he'd survive and, at the hospital, [team manager] Daniele Audetto told me to come to the telephone. It was Mr Ferrari: "Emerson, can you replace Niki?" I said, "Sorry Commendatore, I cannot talk of this now."

But Niki made the miracle. I was there at Monza, when he made the first test afterwards, his skin was so red and blistered... I don't know how he did that. Niki just

WE ALWAYS KNEW THE DREAM OF A BRAZILIAN TEAM WITH MY BROTHER WAS GOING TO BE TOUGH

But I have to say my most important achievement was my first F1 world championship.

GPR: You missed Nigel Mansell in your F1 career, but then raced against him in IndyCar – how was that?

EF: I've never told this story but when Nigel joined Indy in 1993, I called Ayrton and asked "How is Nigel?" because we never raced against each other. Ayrton said, "Nigel's crazy and has incredible car control." So this was in the back of my mind.

We got to Indianapolis, we started side by side, and I was running right behind him for 200 miles, nearly half of the race. Every corner, even Turn 3, Nigel made the back end of the car move. At that speed!

I could see Nigel's gloves in the cockpit, correcting the front wheels. I said on the radio, "He's going to crash, he's going to crash!" But he never crashed. Incredible talent.

The move to the Fittipaldi F1 team owned by Emmo and brother Wilson wasn't a success. Emmo managed only two podiums in five years, the first in Brazil in 1978

had fantastic mental powers, incredible.

GPR: You left McLaren at the end of '75 to join your brother Wilson's Brazilian team, Copersucar-Fittipaldi. Did you then feel jealous of James Hunt winning the world championship in 1976 in the McLaren you would have been driving?

EF: I was in one way, but I was happy for James because he was such a good guy. He always joked, "Emerson, you gave me such a good car!" We had a very good relationship.

We always knew the dream of a Brazilian team with my brother was going to be tough, and it was very difficult, but many people didn't know our background in building Formula Vees and prototype sportscars in the mid-'60s.


GPR: How did your Indy 500 wins compare with your Formula 1 success?

EF: The age that I won Indianapolis, I think that was incredible [Emerson was 42 in 1989 and 46 in '93]. I was dicing with some of the children of drivers I'd raced against [in F1], like Jacques Villeneuve and Michael Andretti, they were so much fun to race... Indy was very special to me, so much history and tradition.

Although he missed competing against him in F1, Emmo (above, on the outside) did race Nigel Mansell in IndyCar in 1993

GPR: What else did Ayrton tell you about Nigel?

EF: Ayrton told me the story in person about Monaco in 1992, when Nigel couldn't pass him at the end of the race. He said Nigel was slumped in his car after the race, like he was dead.

Then they went to the podium and when the three guys opened the champagne, Ayrton sprayed his towards Nigel, and he started running away – only *then* he remembered he was supposed to be tired! Such a character, I really like him. 





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DAN FALLOWS



10 THINGS I LOVE



Aston Martin's technical director
 on his home music studio, guitars
 and fondness for Italy



Music production

Apparently people who are mathematical tend to like dance music. I don't know why that is, but I'm one of them! I've got a home studio where I make music. It's very different from what I do at work; it's very creative. I'm writing some kind of dance tunes, some remixes, things like that. I've always loved playing music and there's also a technical aspect to it. I've got a couple of synthesisers and a PC and some other instruments and stuff. Music production sort of brings a lot of my hobbies together.



Skiing

Ever since I was about 10, I've had a skiing holiday every year. It's probably the best holiday you can have. You've got exercise during the day and a good excuse to eat lots of food in the evening. The scenery is great. And you can't really think about anything else when you're doing it. Perfect!

America's Cup

It's probably the closest motorsport to Formula 1 outside of Formula 1. Just as a technical exercise, it's fascinating. Not only do they have to deal with air like we do, but they have to deal with water, which makes it even more tricky. What they're able to do with the boats these days is just unbelievable.



Cooking

If I wasn't an engineer, I'd probably be a chef. I just love the whole environment. In fact, I recently had the opportunity to help out in a professional kitchen, just for the weekend, and it was an incredible experience. It's amazing the parallels between that and some of the things we do in a Formula 1 team: the time when the pressure is on, the way everyone works together and the kind of team atmosphere. The level of communication and the skills involved are amazingly similar.



Italy

I lived and worked in Italy when I was younger and fell in love with the country, especially the culture, attitude to work-life balance, and landscapes. The food is absolutely incredible. If I had my way, we would go to Italy every summer. I lived in Parma and it's a great place to get around, the whole north of Italy. And the places tourists go to aren't even the best places! The best are the ones you find out about from the locals, these amazing hilltop towns people don't know about. It's just an extraordinary country.



Modern cars

A lot of people are into vintage cars, but I've always been fascinated by the technology of modern cars. I think we're probably living in a kind of golden age of motoring. If you look at the standard of cars these days, it's just extraordinary what they can do. They're fast, they're comfortable, you can plug your phone into them and have all sorts of information and music at your fingertips. I'm lucky enough to have an EV and a small sports car and they're both incredible cars for very, very different reasons.



Working in a team

I was an only child. So I sort of grew up having to do everything on my own. And I kind of thought that was the best way to work. But one of the things I've learned as I've grown up is that you get so much more out of yourself when you work in a team. I think one of the great things about being in an F1 environment is that the people here are so motivated and so capable that it brings out the best in you and it brings out the best in them. I can be thinking about something all weekend and then come in and have a chat with some of my colleagues and within half an hour we've solved the problem.



Guitars

I have a collection of guitars – mainly because I actually play them. Not particularly well, but I do play them. But also, I think aesthetically they're just the most amazing things. So I have a load of them hanging on my wall. And if I have any spare time and money, I tend to go and buy another guitar, which probably drives my wife crazy. I've got about seven at the moment, and I've been trying to rationalise. But my son has started playing now, so that's probably a good excuse to buy another guitar.

Cotswolds

We're lucky enough to live on the edge of the Cotswolds and for me there's just something special about it. I think it has a reputation for being a bit of a British countryside theme park. But it really isn't. There are a lot of places where you can go completely unspoiled and it's just the peace, the tranquillity... Every time we go there, it immediately calms me down. It's the place I would go pretty much every weekend just to walk and get some fresh air. I just love it there.



Family time

Obviously we have a very high-pressure job, so we spend a lot of time at work. I have two children. And my wife and I make sure that we make time to spend it all together. It's more than just 'Oh, I've been at work all week and now I've got to go and spend some time with the family'. It really is the best way for me to get away from work and relax. It's the most effective way to get out of that work zone and sort of become yourself again. So it's incredibly important to me.

NIKI LAUDA

40 years ago this remarkable triple champion began his last title campaign

▼ Although he had bought his way into March's F2 outfit for 1971, one of the team's regular cars was loaned to Lauda to make his F1 debut at his home race





◀ In 1971 Lauda took out a bank loan, against his family's wishes, to fund his early career in F2 with March. By 1972 he was racing for the F2 and F1 teams, but managed only a best of one seventh in F1. The low point was disqualification in Canada for receiving outside assistance

▼ Four races into his Ferrari career Lauda claimed his maiden F1 victory when he won the 1974 Spanish GP at Jarama, 35.61s ahead of his teammate Clay Regazzoni. It was Ferrari's first win since 1972 and Lauda would claim six poles that year but only one more win, at the Dutch GP

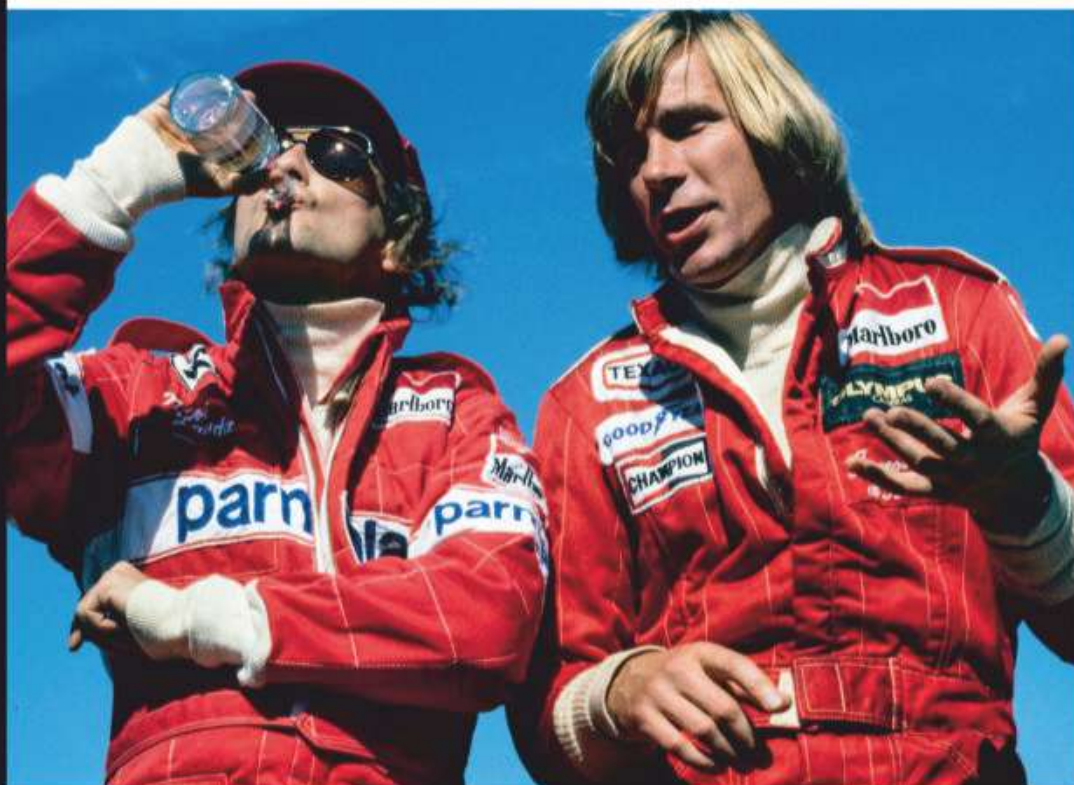


◀ Link the Nürburgring with Niki Lauda and thoughts naturally turn to his crash there in 1976. However, Lauda was a master of the 152-corner circuit and in 1974 put his Ferrari on pole, repeating the feat a year later. In 1975 he was also the first to lap the track in under 7 minutes at 6m58.6s

▼ Lauda's move to BRM for 1973 was unsuccessful in terms of pure results, but it did kickstart his career. In a car that was no match for the frontrunning Tyrrells and Lotuses, Lauda ran as high as third in Monaco until the gearbox failed. And that performance got him noticed by Enzo Ferrari...



▼
Lauda was involved in one of F1's most famous title battles when he scrapped, unsuccessfully, with friend James Hunt for the 1976 crown. Lauda's crash and immense courage to return, with a dash of controversy thrown in, made for an unbelievable season, immortalised in the 2013 film *Rush*



▼
After two seasons out of F1 Lauda was persuaded to return by new McLaren boss Ron Dennis, and a substantial salary bankrolled by Marlboro. He won his third race back, the US GP West at Long Beach, and also claimed the British GP at Brands Hatch later in the season

▼
World champion in 1975 and second in 1976 by a single point, consistency ensured Lauda had a straightforward run to his second world title. He clinched it at Watkins Glen, round 15 of 17, and then decided, due to a decline in his relationship with Ferrari, to sit out the last two races

▲
Lauda's F1 comeback in 1982 would eventually prove successful in the best possible way when he won the 1984 championship, his third title, by half a point from McLaren team-mate Alain Prost. A year later he would retire from F1 for the final time, bowing out at the 1985 Australian GP





▲ Probably the most controversial of Lauda's 25 F1 wins came in the 1978 Swedish GP at Anderstorp, in his first year at Brabham. He'd already managed three podiums in the Alfa F12-engined BT45C and BT46 and then came the BT46B, the infamous fan car. The huge fan, mounted over the engine, sucked air from under the car. Lauda won comfortably, and the car was declared legal, but was never seen again after Brabham withdrew it

▲ As early as 1978 Lauda was flying himself. Then, in 1979, he founded Lauda Air, which started operations as a charter and air taxi service in 1985. It began internal scheduled flights in 1987, and international ones in 1990, but in 2000 Lauda sold the company to Austrian Airlines. He was also involved in, or owned, at various times low-cost airline Niki and Air Berlin

► Despite winning his second world title with Ferrari in 1977, Lauda was unhappy at the Scuderia and moved to Brabham. He won twice in 1978 but the 1979 season was a disaster. The new V12 Alfa engine was plain unreliable and Lauda finished only two races out of 13





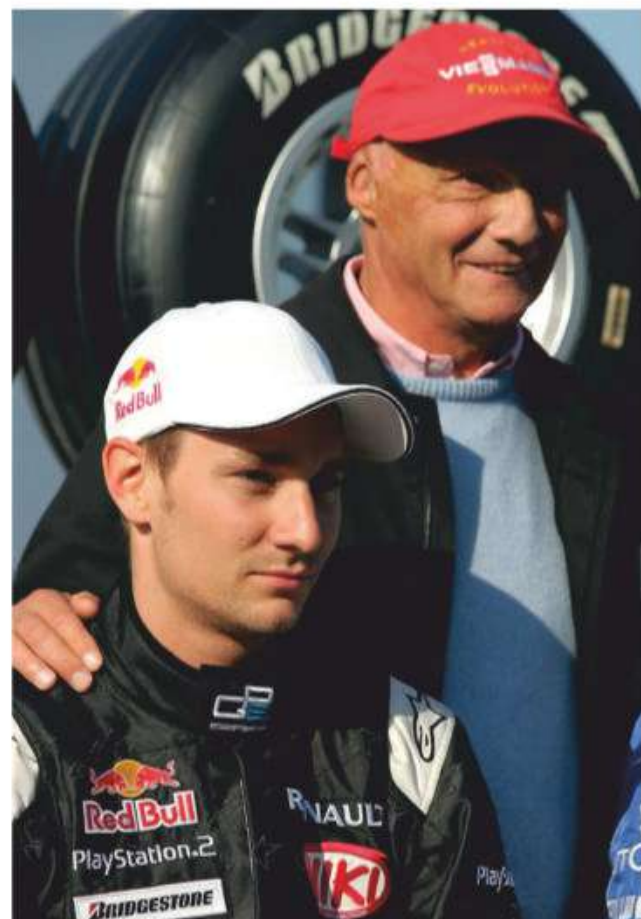
▼
F1 was shocked when, after a few practice laps for the 1979 Canadian GP, Lauda stepped out of his Brabham and announced his retirement with immediate effect. In 1980 and 1981 he put time into trying to get his airline, Lauda Air, going, as well as contributing to the odd book...

▲
Lauda would play an instrumental part in persuading Lewis Hamilton to leave McLaren and sign for Mercedes for 2013, after the pair had a number of conversations in 2012. Lewis has since won six titles with the team and had a huge amount of respect for the Austrian

▼
Niki had four children, the first two Mathias and Lukas from his first marriage to Marlene Knaus. Mathias, managed by Lukas, followed in his dad's footsteps and raced as high as GP2 in 2005. More recently he was a class winner in the 2017 World Endurance Championship



▲
After one race in 1971 and a full season in 1972, all in March cars, Lauda opted to buy his way into BRM for 1973 by taking out another bank loan. It paid off initially, as he scored his first points for finishing fifth at Spa, but the P160 was unreliable and the V12 engine underpowered



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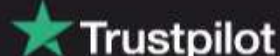
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SCAN ME



▲ With the 14.19-mile Nürburgring understandably deemed too dangerous to race on following Lauda's 1976 crash, the German GP moved to Hockenheim for 1977. Lauda went into the race leading the world championship and extended his lead with his second victory of the season

▼ When Lauda died in 2019 just before the Monaco GP there were tributes to him up and down the grid during the weekend, including the wearing of a trademark red cap. And as a mark of respect for the team's loved non-executive chairman, Mercedes placed one in his headphone slot



◀ Ahead of his F1 return in South Africa in 1982 Lauda spotted a clause he didn't like on the superlicence form, one that gave teams control over contracts. He was then at the forefront of a drivers' strike that threatened to halt the race

▼ Lauda's return to F1 in 1976, after the crash that nearly killed him, almost ended in a second world title. But in Japan, despite leading James Hunt by three points, he decided conditions were too unsafe to continue. He withdrew after two laps and then watched the race from the pits



Toto Wolff



Niki Lauda



Sebastian Vettel



Valtteri Bottas



James Allison



Lewis Hamilton



Valtteri Bottas



Rob Marshall



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LISTA

MAURICE HAMILTON'S ALTERNATIVE VIEW

To beat up an Oscar Wilde witticism, unpunctuality is the thief of live timing – as our man found out when he was unavoidably delayed ahead of the season finale...

PICTURES  AND FORMULA 1

SO, WE GET TO ABU DHABI and everything has been sorted. Max Verstappen is likely to win and establish a record for establishing records. The only thing left to decide is P2 in the Constructors'. Since that is worth \$130 million (give or take a million or two) in a business where some teams pay a legion of people in communications to communicate it's not fair to have another team join F1 and share the loot (and sod the drivers on the reserves' bench), I decide for once to record the race rather than watch it live. Big mistake.

The usual routine is to have F1 live timing on a laptop and the TV tuned to Sky, sometimes with the volume down while listening to commentary provided by the F1 website. This wish to occasionally have a variety of voices can be scuppered by the delayed F1 commentary being out of sync with what's happening, which can



2023 was a year of Max Verstappen domination, the Dutchman setting record after record, so watching the season finale live wasn't going to be top of many wish lists



The race for victory in Abu Dhabi was over as a contest, barring a mechanical failure, as soon as Verstappen hauled himself far enough ahead of his chasers to be outside the clutches of DRS

make life even more confusing than it already is for this viewer – for reasons I'll get to in a minute.

For Abu Dhabi 2023, I'm delayed in the pub – for reasons I will not get to in a minute – but there's no need to worry because the trusty recorder is doing its job. Radio silence and avoidance of social media means settling down in front of the TV with the usual sense of anticipation as Crofty shouts: "Lights out and away we go!" (Too late for Martin's grid walk. Having resorted to hiding behind the settee for the Las Vegas Celebrity Cringe Crawl, I console myself that I might not have missed much.)

After two laps, Max has got himself out of DRS range. Barring misfortune, it's game over. Never mind, there's several good scraps going on. All's well until the pitstops begin on lap 11 and the leader board becomes jumbled.



Sergio Pérez chases Lando Norris in Abu Dhabi. The penalty the Mexican received after contact with the McLaren might not have been immediately obvious to fans at the track

No worries: I'll turn on the laptop and....ah, wait! No live timing because I'm in a post-pub time zone where time doesn't seem to matter much. Never mind; I can resort, for the first time, to the leader board on the left of the TV screen. Another mistake. The graphic is next to useless.

Sure, can I see VER is leading from LEC, TSU (which I have to double-check to make sure it is who I think it is), down to SAR at the bottom. It may as well be in Japanese fretwork – that's not far from the truth given a position a reasonable distance from the screen and my need (as I now discover) for multifocal lenses to read this narrow band of info and nothing to do with the aforementioned lunchtime diversion. What I need to know with increasing befuddlement is who has stopped and the tyres each driver is now running.

Sure, the commentators occasionally mention these points of significance during conversations that assume the viewer has been paying total attention throughout and not distracted by the dog demanding to go for a pee because you forgot to let him out on returning from you-know-where.

It gets worse when an interesting battle shaping up between X and Y turns into a no-contest overtake because, as the commentator says matter-of-factly: "Of course, X knows his fight is not with Y because he's on a different strategy." Of course! How could I have failed to appreciate that? Time to go and let the dog back indoors.

The realisation is dawning about how much I've

Laps Sectors Segments Tyres										
RACE FINISHED										
POSITION	LAP TIME	GAP	INTERVAL	S1	S2	S3	POS	TYRE	DRS	PIT
1 VER	1:28.545						- 0	15 (H)		2
2 LEC	1:31.284	+17.993	+17.993				- 0	23 (H)		2
3 RUS	1:28.820	+20.328	+2.335				↑ 1	24 (H)		2
4 PER	1:27.948	+21.453	+1.125				↑ 5	16 (H)		2
5 NOR	1:28.588	+24.284	+2.831				- 0	25 (H)		2
6 PIA	1:28.467	+31.487	+7.203				↓ 3	22 (H)		2
7 ALO	1:28.706	+39.512	+8.025				- 0	22 (H)		2
8 TSU	1:30.380	+43.088	+3.576				↓ 2	36 (H)		1
9 HAM	1:30.894	+44.424	+1.336				↑ 2	23 (H)		2
10 STR	1:29.683	+55.632	+11.208				↑ 3	16 (H)		2
11 RIC	1:29.020	+56.229	+0.597				↑ 4	27 (H)		2
12 OCO	1:30.639	+66.373	+10.144				- 0	43 (H)		1
13 GAS	1:29.547	+70.360	+3.987				↓ 3	26 (H)		2
14 ALB	1:28.670	+73.184	+2.824				- 0	15 (H)		2
15 HUL	1:29.217	+83.696	+10.512				↓ 7	25 (H)		2
16 SAR	1:29.379	+87.791	+4.095				↑ 4	17 (H)		2
17 ZHO	1:30.327	+89.422	+1.631				↑ 2	21 (H)		2
18 SAI	RETIRED	1L	1L				↓ 2	1 (H)		
19 BOT	1:30.550	1L	+13.316				↓ 1	28 (H)		1
20 MAG	1:31.256	1L	+2.465				↓ 3	35 (H)		2

You only really realise the value of a timing when it isn't there and you're trying to work out what tyres drivers are on and how many laps the rubber has done

been taking live timing for granted. Thanks to this F1 website, you not only have pitstops noted, but also which tyre is being used – and, significantly, for how many laps; essential information for any armchair wannabe Bernie Collins.

I'm drying the dog's paws while trying to figure out who is where in this brain-delayed race. It's complicated. You wonder how a first-time spectator copes when confronted by a procession

of cars with special liveries never seen before and numbers that can't be read. As for identifying drivers wearing crash helmets that, with a few exceptions, carry colour schemes from runners-up in a painting competition for five-year olds...

It seems a good time to ask what on earth the punters in Las Vegas thought after shelling out thousands of dollars to be presented with all the above and not have a clue about what was going on after 45 minutes of noise and baffling strategies? According to those in charge at Vegas, it was a "fantastic success". So, there you go.

Meanwhile, in Abu Dhabi, Sergio Pérez has been given a five-second penalty for going motor racing. But if you're at Turn 9 within sight of a screen but no chance of reading the message, in tiny text, giving the gist of his misdemeanour, it will come as a surprise to learn on your way home he didn't finish where you thought he did and Ferrari lost P2 in the championship by 1.1 seconds (which equates to about \$9m per second in terms of the difference between P2 and P3 pay-outs).

Mind you, if you're a Yas Marina regular, you will be accustomed to shameful goings-on in the final laps and easily forgiven for deciding next year to give the race a miss. You could go down the pub or take the dog for a walk. Better still, combine them both and not be interrupted by a cross-legged canine when watching the recording and trying to figure out what the hell's going on.

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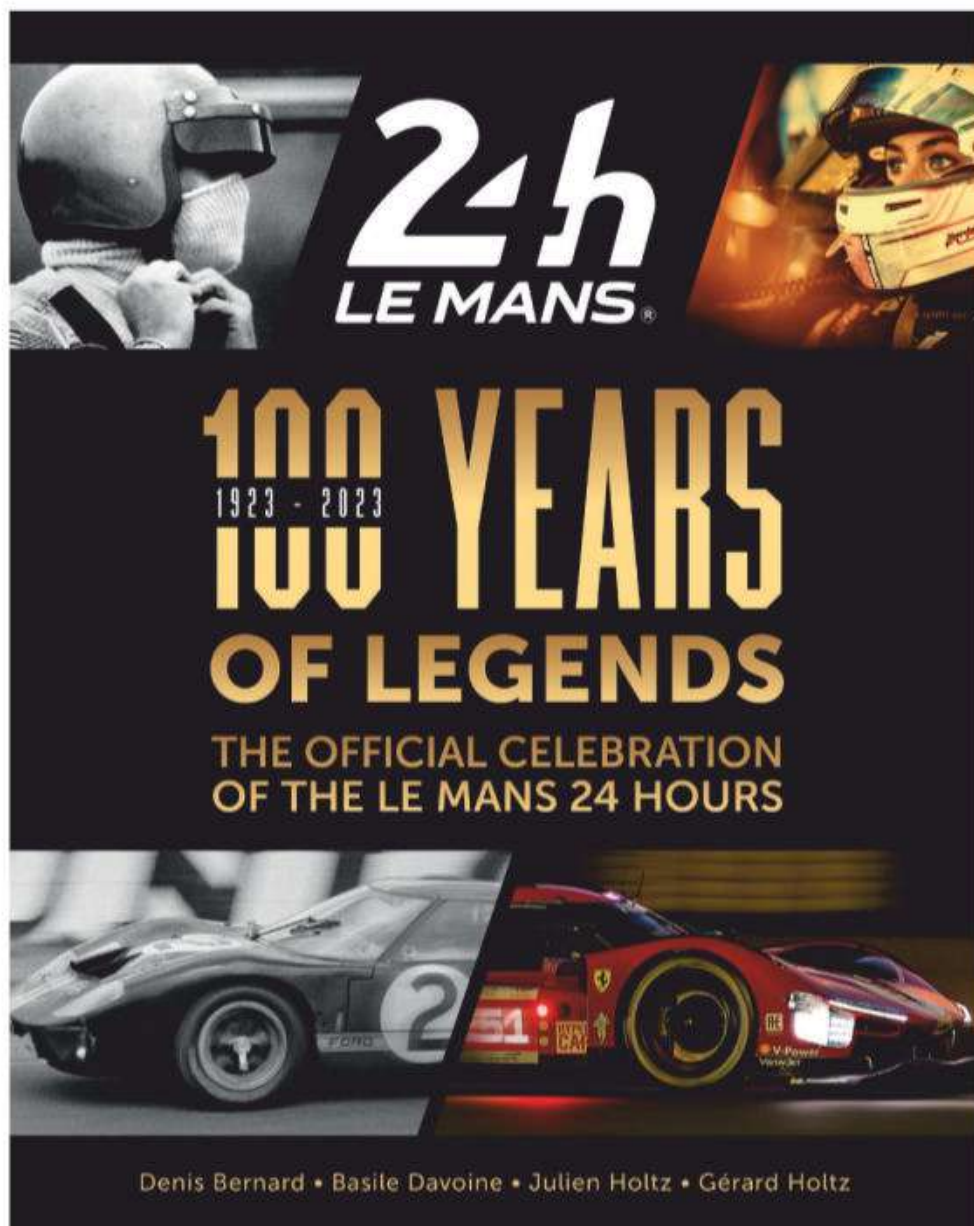
100 YEARS OF LEGENDS

Price £70
evropublishing.com

The Le Mans 24 Hours celebrated its 100th anniversary last year as former F1 driver Antonio Giovinazzi, with team-mates James Calado and Alessandro Pier Guidi, won in Ferrari's sensational 499P hypercar, completing 342 laps of what is now an 8.47-mile course. 100 years earlier André Lagache and René Léonard managed 128 laps of what was then a 10.72-mile track (on broadly similar roads but entering the city itself),

bravely weathering miserably wet conditions in their 15-horsepower Chenard-Walcker bolide.

In this book, which comes with the blessing of the race organiser, four authors including French TV's Gérard Holtz and *Motorsport.com*'s Basile Davoine recall the epic sweep of the legendary enduro's history. As usual with Evro's books it is glossily rendered with extensive period illustrations and photography.



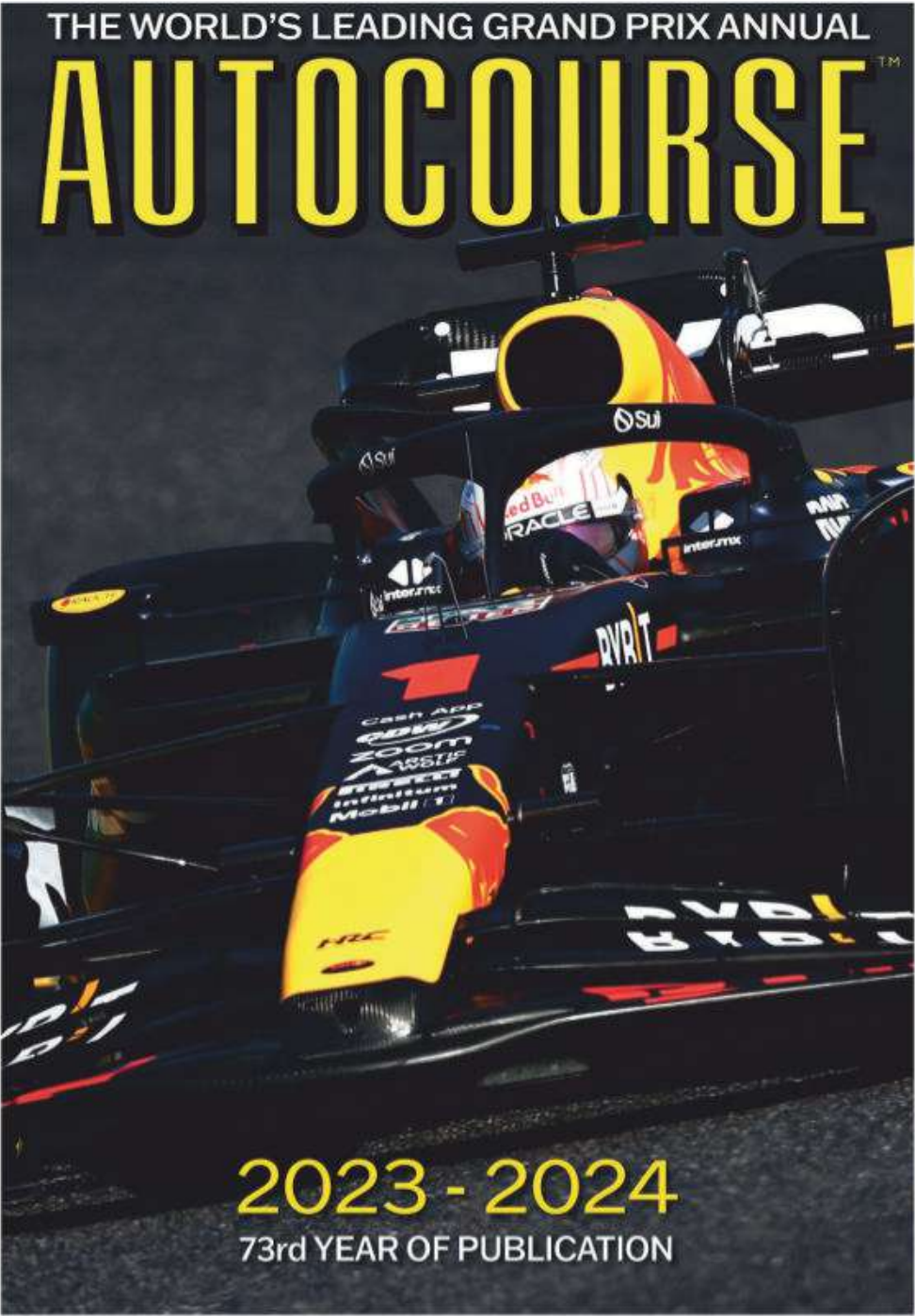
ORIENT CLASSIC AND SIMPLE STYLE

Price £287.99
orientwatch.co.uk

Although Epson-owned Orient is a relative newcomer to the UK market, the Japanese company has been making affordable but practical watches for 90 years. Its Classic And Simple Style model is among its most popular offerings: a dress-style watch with a slim, polished bezel in stainless steel, domed glass, roman numeral

indices and two sub-dials. Now Orient has added a new colourway for the UK market featuring a forest green dial with a brown leather strap.

Adding to the retro look and feel is a mechanical hand-wound F6B22 movement. The watch has a 40-hour energy reserve and is claimed to be water-resistant to 30m.



AUTOCOURSE 2023-2024
Price £70
iconpublishinglimited.com

No winter is complete without the definitive Formula 1 and top-level motorsport annual, now in its 73rd year of publication. Former GP Racing staffer Tony Dodgins and current contributor Maurice Hamilton report on each of 2023's grands prix in depth, including lap charts and tyre strategies (hopefully Tony was in charge of this facet for Abu Dhabi

– see p100). Mark Hughes analyses tech developments team-by-team with illustrations from Adrian Dean. Autocourse also covers F2, F3, Formula E, the World Endurance Championship, NASCAR and the top three touring car series, while Gordon Kirby wraps up IndyCar, where McLaren protégé Pato O'Ward (see p56) claimed seven podium finishes.

SECRETLAB TITAN EVO RED BULL EDITION

Price £539
secretlab.co.uk

Serious gamers will appreciate the importance of an ergonomically designed gaming chair and Secretlab's Titan Evo comes highly acclaimed for the quality of its materials and build, plus its wide choice of customisations. This new Red Bull Racing tie-in features the team's logo and red contrast stitching, plus the charging bull branding on the seat back. There is a choice of two custom tags featuring

Sergio Pérez and Max Verstappen's initials and race numbers. For an additional £79 you can order a Secretlab Lumbar Pillow Pro, also in Red Bull-specific colours with a choice of Max or Checo's initials and driver numbers. Gamers who allow their felines into the room for moral support and score verification should note PC Magazine's observation that the chair's NEO hybrid leatherette upholstery "is vulnerable to cats".





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WHY McLAREN IS DAMPING DOWN THE HYPE

McLaren management has so far resisted the urge to cry wolf. Rather than flattering to deceive by reassuring fans and sponsors that all would be rosy, Andrea Stella and Zak Brown were clear on the eve of the 2023 season. Winter development targets had been missed, the car needed a major aerodynamic overhaul to be competitive and, until those upgrades came, a period of pain lay ahead. Refreshingly for Formula 1, honesty was adopted as the best policy.

Eventually, the new parts did arrive via a major three-stage update package. As had been foretold, McLaren was back in business thereafter. At a time when Aston Martin, Mercedes and Ferrari couldn't make their minds up as to who was second quickest, McLaren strode ahead to become the most consistent challenger to Red Bull.

Consider those in-season gains, plus the Woking factory now having signed off and calibrated a new

makes it tick as Mercedes must soon do. All these positive factors created the impression McLaren is best placed to take the fight to Red Bull from the off. After last year's monopoly, F1 would welcome a multi-team contest.

But, if McLaren follows recent form and really is true to its word, how much of that optimism should be snuffed out by the latest rhetoric from the top brass?

Stella has made it plain that the team must not get ahead of itself or else risk crashing back down to earth should McLaren be anything less than immediately mega. He said: "We don't have to create false expectations because then reality comes to you in a violent way, and we don't want to find ourselves in this position."

Brown comes across as similarly reserved. While he recognises that the new hires and infrastructure will ultimately give the team everything required to chase championships, he reckons there's a six-month lag before the benefits will begin to be felt. In other words,

these assets arrive too late to change the fortunes of the car that will roll out for testing in Bahrain.

Perhaps this is all more pragmatic than pessimistic. It would be foolhardy to promise race wins only to fall short, especially so soon after Max Verstappen has led Red Bull through statistically the most dominant campaign in F1 history. Still, the tone from McLaren is a touch demure and suggests a reality check may be due just when the hype surrounding the squad is at its highest in a decade.

The other key factors that stunted the spectacle in 2023 (Pirelli tyres overheating far too easily; car aerodynamics being developed well beyond what rule makers envisaged, leading to the return of dirty air) haven't been addressed for this year. As such, there's even more emphasis on what Red Bull's rivals might muster to close the gap and generate on-track entertainment. McLaren was a major source of that intrigue but now seems to be easing off.

At least Lando Norris has been handed a different hymn sheet. He went into the break much more buoyant, deviating from the party line to say: "We know we still have plenty more things to come next year, so I'm excited... I'll be optimistic. I believe we can do it as a team." Hopefully, he's closest to the truth this time around.



Brown and Stella with some of the spoils of 2023. The pair are both being cautious about the team's chances of success in 2024

state-of-the-art wind tunnel. Also remember that McLaren has nicked key tech staff from Ferrari and Red Bull for this year. Yet, the incumbent designers don't need to rip up their car concept for 2024, start afresh and take time to work out what



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